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Marketing Research Report No. 301

FLAXSEED

MARKETING PRACTICES AND COSTS AT COUNTRY ELEVATORS

Agricultural Marketing Service
Marketing Research Division
UNITED STATES DEPARTMENT OF AGRICULTURE

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PREFACE

This report is one of several by the Marketing Research Division, Agricultural Marketing Service, concerned with marketing practices and costs. It is part of a broad program of research designed to hold down costs and increase efficiency in the marketing of farm products. It provides information on practices and costs of handling and marketing flaxseed at country elevators in Minnesota, North Dakota, and South Dakota. Data on which much of this report is based were obtained from elevator managers, owners, and operators in those three States.

Elevator lists were furnished by the Public Utilities Commission of South Dakota, Public Service Commission of North Dakota, and Railroad and Warehouse Commission of Minnesota. The survey was conducted with the cooperation of the Farmers Elevator Associations of Minnesota, North Dakota, and South Dakota, Northwest Country Elevator Association, Farmers Union Grain Terminal Association, and J. O. Culbertson, president, Flax Institute of the United States. The elevator survey was conducted with the assistance of A. R. Semmen, agricultural economist, formerly with the Agricultural Marketing Service.

Valuable suggestions for this study were made by Rex Cox, formerly of the Department of Agricultural Economics, University of Minnesota; Herbert Herbison, Extension Director, North Dakota Agricultural College; and M. J. Johnson and the personnel of the Minneapolis Grain Division, Agricultural Marketing Service. Manufacturers provided information on prices of grain cleaning equipment, and the Minneapolis Grain Exchange supplied current freight schedules.

February 1959

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FLAXSEED MARKETING PRACTICES AND COSTS AT COUNTRY ELEVATORS

By William M. Manion and C. Milton Anderson, agricultural economists
Marketing Research Division, Agricultural Marketing Service

SUMMARY

The cost of marketing flaxseed to country elevators was found to be 5.6 cents more per bushel than for other grains handled. About half of this additional cost occurred in handling at the elevator, while the remainder resulted from higher freight charges. The higher marketing costs to the country elevator are, however, offset by (1) larger elevator gross operating margins, and (2) cleaning of flaxseed, resulting in (a) reduced freight charges and (b) returns from the sale of screenings.

Freight costs accounted for an average of 70 percent of the total elevator marketing spread between farm producers and terminal buyers. These freight expenses ranged from an average of 56 percent of the marketing dollar in Minnesota to 73 percent in North Dakota. Rail freight charges for flaxseed are 112 percent of the established rates for other grains, while truckers generally levy a charge of 3 cents per bushel for flaxseed above the regular grain rate. Other charges, including commissions and inspections, totaled 10 percent. The gross elevator margin accounted for an average of 20 percent of the total marketing spread between producer and terminal market.

The handling of excessive dockage is the greatest single avoidable cost factor to country elevators in flaxseed marketing. Average dockage in flaxseed received at country elevators surveyed during the 1955-56 marketing year was 16.3 percent. These same elevators shipped an average of 10.3 percent dockage with their flaxseed at a cost of nearly 3 cents per net bushel. Less than 40 percent of the total dockage received with flaxseed at elevators was removed, while over 60 percent was transported to terminal markets at elevator expense, generally without remuneration.

For the 3-State area, elevators shipping flaxseed containing 15 percent dockage paid over 3 cents per bushel more for freight than elevators shipping only 5 percent dockage. Returns on flaxseed are approximately 1.5 cents per bushel greater when all flaxseed received is cleaned than when only a part is cleaned. At most elevators cleaning 10,000 bushels of flaxseed or more, the savings on freight costs alone more than offset cleaning costs, and the returns from screenings sales become, in effect, a bonus.

Flaxseed cleaning is much more expensive than cleaning wheat. Cleaning costs range from 1.7 cents per bushel at elevators cleaning 50,000 bushels to 5 cents per bushel at many elevators cleaning only 5,000 bushels annually.

Shrinkage in flaxseed averaged 1.53 percent at all elevators from the time of purchase to sale, or about 50 percent greater than that found for wheat. Over two-thirds of the flaxseed shrinkage occurred as a direct result of handling. The greater shrinkage, together with the higher value of such losses, cost elevators between 1.5 and 2 cents per bushel more for marketing flaxseed than for wheat.

Insurance coverage on flaxseed stocks and interest on working capital used to purchase flaxseed from producers are generally one-third higher than on wheat. Because of the rapid turnover during short periods of time, these costs per bushel are important though, small.

The cost of preparing boxcars for hauling flaxseed, including the paper liner, averages about $6.50 compared to about $1.50 per car for wheat. Grain trucks are generally maintained in good condition.

During the 1955-56 marketing year, 90 percent of the flaxseed handled by country elevators was shipped out by rail and 10 percent by truck. Railroads are preferred, despite seasonal boxcar shortages, because of the unavailability of trucks in many areas, the lack of truck loading facilities, and the truck unloading charge levied at the terminal. A far greater proportion of flaxseed is moved by truck in areas of Minnesota and South Dakota close to the Minneapolis market than in the more distant areas of North Dakota.

Trucks are used to accommodate the less-than-carload lots of the small handlers and to relieve the capacity limitations of the large-volume handlers. Truck hauling charges are often cheaper than rail in areas where both modes of transportation are available.

Nearly 75 percent of the flaxseed shipped by elevators is sold on a deferred delivery "to arrive" basis, which shifts the risk of unfavorable price changes to the buyer. The comparative uniformity and the lack of premiums and discounts make it possible for flaxseed to be sold readily by grade without buyer inspection. Consignment and "on track" sales constituted 20 percent of the flaxseed marketed, while only 5 percent was sold "on spot" and for cash at the elevator.

With the increase in flaxseed cleaning, new outlets have developed for flaxseed screenings for use in livestock and poultry feeds. Truckers and local buyers purchase slightly over 75 percent of the screenings sold at elevators. Terminal markets, however, still receive the bulk of the dockage material.

Prices received for flaxseed screenings and the proportion sold through each of the 3 outlets depend upon the type and quality of the screenings, the concentration of competition among buyers, the area in which an elevator is located, and its proximity to the Minneapolis terminal market. Sales made to local buyers are, to some degree, free of the terminal market forces and generally offer the greatest net return. Prices paid by truckers are not as high as those offered at terminal markets, but the transportation charges incurred usually more than offset the terminal price advantage.

INTRODUCTION

Over 90 percent of the annual U. S. flaxseed crop is produced in North Dakota, Minnesota, and South Dakota. Since the sales value of flaxseed is based largely upon its oil content, nearly all flaxseed is sold off the farm, whereas varying percentages of other small grains are retained by producers for feed. The bulk of the flaxseed enters the market by way of the country elevators. It has a higher per-unit value than any other small grain, greatly increasing its importance to elevator management.

This study was designed to analyze flaxseed marketing at country elevators, the main objective being to determine the relative importance of elevator handling costs, transportation charges, and the total margin of return over costs on a per-bushel basis. This cost analysis should be helpful to flaxseed growers, elevator operators, handlers, and processors, all of whom perform flaxseed marketing functions. Through improved marketing practices, elevator marketing costs may be held down to the benefit of the flaxseed grower, the industry, and the consumer of flaxseed products.

The study places particular emphasis on the importance of handling and shipping dockage 1/ in relation to the cost of dockage removal and the returns from the sale of screenings. It is important for elevator operators and managers to know the volume of flaxseed needed to make a cleaning operation economical and the optimum percentage of dockage to transfer with the seed to terminal markets. Also, elevator managers should consider the cost of owning and operating cleaners--including depreciation, operating expenses, and shrinkage losses which result. Cleaning flaxseed requires greater experience and a more careful operation than cleaning other grain. Screenings removed must often be stored and subsequently disposed of, thus increasing the storage space and handling time devoted to dockage.

To analyze and evaluate the flaxseed marketing operation at country elevators, it is helpful to study the costs and returns under present handling practices at individual elevators as compared with those for other grains.

METHOD OF STUDY

Information relating to the marketing costs and margins for flaxseed between country elevators and terminal markets and the mode of transportation employed was obtained from 265 elevators in North Dakota, Minnesota, and South Dakota. Of the 265 schedules, 220 were completed through enumerator contacts with elevator managers, while the remaining 45 were returned by cooperating line company elevators with headquarters in Minneapolis. The survey of the

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1/ "Dockage" includes all matter other than flaxseed which is contained in the lot of grain as a whole; and also undeveloped, shriveled, and small pieces of flaxseed removed with the dockage which cannot be recovered by properly rescreening or recleaning.

1955 flaxseed crop was conducted during the summer of 1956. The study also covered supplemental transportation data for 1957. Figures 1 and 2 indicate the areas of flaxseed production and the corresponding location of the elevators surveyed. Each State has been divided into 3 areas, each including 3 crop reporting districts.

The selection of the sample included every fourth elevator in Minnesota, North Dakota, and South Dakota storing flaxseed commercially during October 1955. The sample did not include terminal elevators or elevators having less than 1,000 bushels of flaxseed in storage at that time. After the original sample had been drawn, all the elevators in the area having 15,000 bushels or more of stored flaxseed in October were added. These are referred to in this report as the "15 plus" group of elevators.

In addition to classification by States, elevators were grouped functionally as follows: 154 independent elevators either privately or cooperatively owned, 74 line company elevators, and 37 of the "15 plus" group of elevators. In instances where the inclusion of "15 plus" elevators would seriously distort the averages, only data from those elevators selected at random were presented, or each type of elevator was listed separately according to functional classification.

The amount of flaxseed handled by independent and line company elevators averaged 40,500 bushels, while the "15 plus" elevators handled an average of 95,000 bushels of flaxseed during the marketing year. The total volume of flaxseed handled by elevators surveyed accounted for 31 percent of the flaxseed produced in the United States during the 1955-56 marketing year.

COSTS OF HANDLING FLAXSEED

During recent years, the costs of marketing farm products have risen markedly. For example, railroad freight rates on agricultural commodities increased more than 79 percent from 1945 to 1957. 2/ Motor truck hauling charges also have continued to increase.

In addition to transportation, other marketing costs have risen at country elevators. Ninety-three percent of the elevator managers interviewed found flaxseed more costly to market than any of the other grains handled. The remaining 7 percent indicated flaxseed equalled other grains in costs. A slightly lower percentage of the managers at elevators handling larger volumes found flaxseed marketing costs higher than those for wheat, although 86 percent found that flaxseed was more difficult to handle and required more expensive equipment. Elevators handling large volumes of flaxseed were generally better equipped to handle the liquid-like seed.

2/ Marketing and Transportation Situation. U. S. Dept. Agr. Agr. Mktg. Serv. MTS-131, Nov. 1958, p. 41.

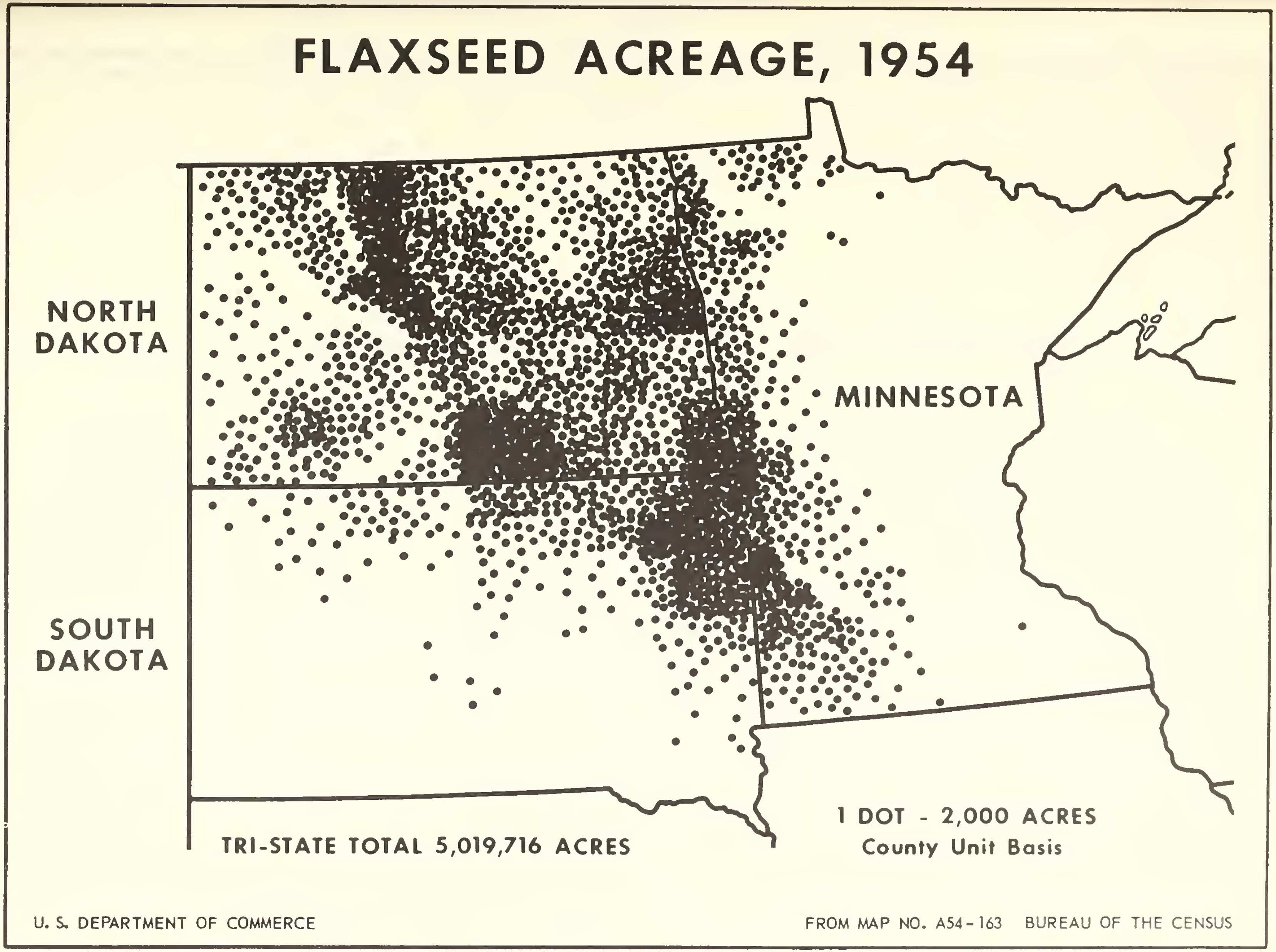
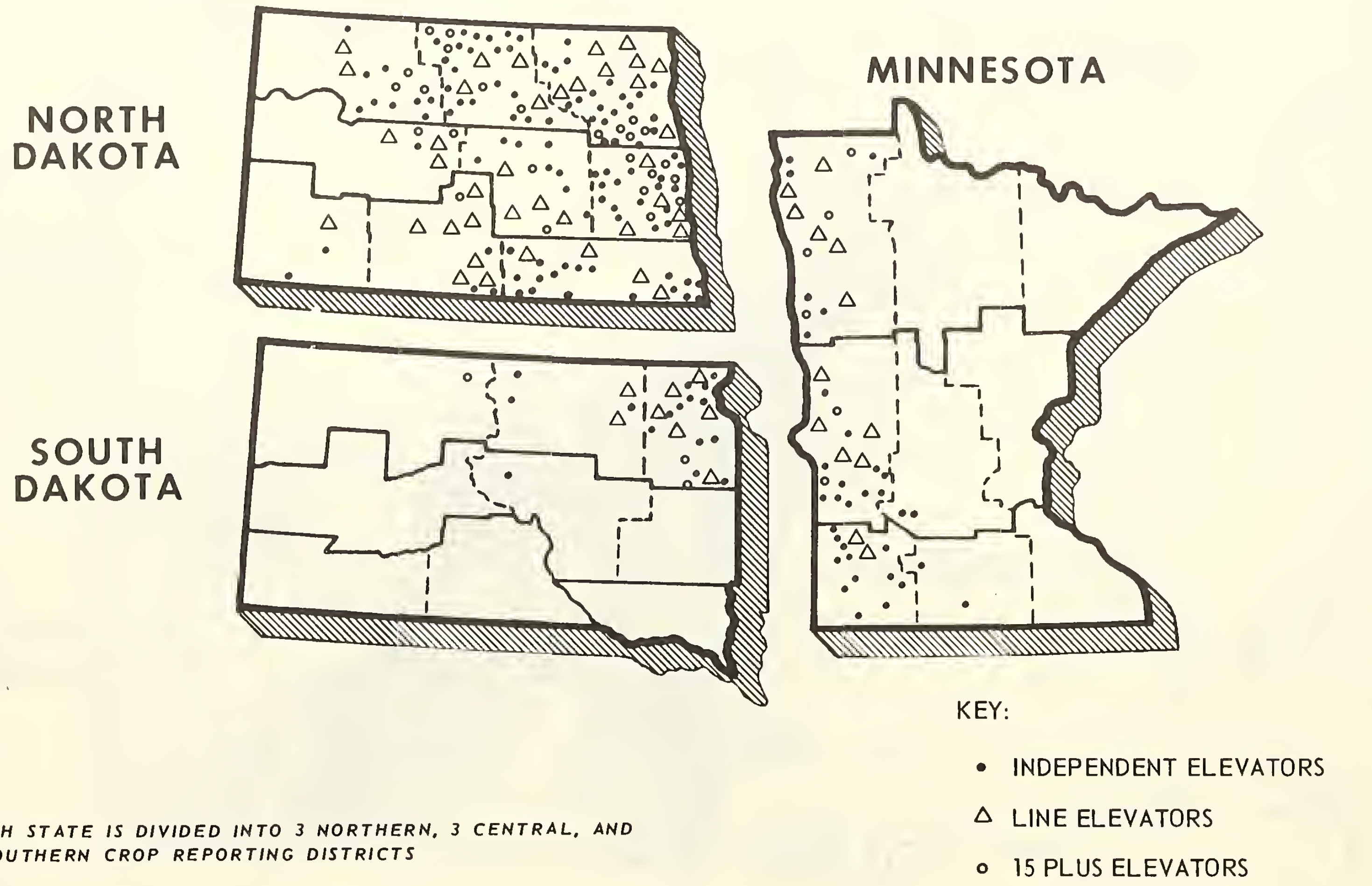

FLAXSEED ACREAGE, 1954
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
1 DOT - 2,000 ACRES
County Unit Basis
TRI-STATE TOTAL 5,019,716 ACRES
U. S. DEPARTMENT OF COMMERCE
FROM MAP NO. A54-163
BUREAU OF THE CENSUS

Figure 1



Location of country elevators surveyed.

EACH STATE IS DIVIDED INTO 3 NORTHERN, 3 CENTRAL, AND 3 SOUTHERN CROP REPORTING DISTRICTS

U. S. DEPARTMENT OF AGRICULTURE NEG. 6662-58 (11) AGRICULTURAL MARKETING SERVICE

Figure 2

The costs of marketing flaxseed in 186 elevators averaged 2.9 cents per bushel higher than the costs for other grains purchased and shipped to terminal markets. When the average cost of transporting dockage is included in the freight cost, the additional cost may amount to 5.6 cents per bushel more than for wheat. In order to cover the higher flaxseed marketing costs, elevators, by necessity, rely on a larger gross operating margin. When the seed is cleaned to reduce freight expenses, and returns from the sale of screenings are obtained in addition to the greater margin, total returns offset the higher costs and flaxseed marketing becomes as profitable as that of other grains.

Elevator managers were interviewed to determine reasons for the higher marketing costs of flaxseed. Of the 265 responding, 57.4 percent cited the costs of cleaning or handling and shipping flaxseed containing a high percentage of dockage, 50.7 percent cited insurance costs, 35.4 percent indicated shrinkage losses were an important factor, 18.3 percent cited boxcar preparation, 15.3 percent cited interest on additional working capital, 15.3 percent risk, 6.7 percent bin repair, and 2.6 percent gave other reasons.

Dockage

The handling of excessive dockage is the greatest single avoidable cost factor to country elevators in flaxseed marketing. High costs resulting from excessive amounts of dockage are due to: (1) Cleaning or screening costs, (2) increased per bushel freight charges, (3) use of additional elevator operating space and boxcar capacity, (4) sampling differences resulting in appeals, and (5) increased risk of heating due to high-moisture weed seeds. The relative importance of these costs to any individual elevator depends upon various factors, including the annual volume of flaxseed handled, the average percent of dockage in the flaxseed as received, and the proportion of flaxseed cleaned prior to terminal delivery.

The problem of reducing excess dockage reverts to the farm level. Farmers have varying production practices. Some growers take great care in reducing weed infestations in their flaxseed fields while others make little effort to control weeds. Therefore, individual receipts of flaxseed at country elevators varied from 1 to 86 percent dockage, with an average of 16.3 percent. The range in percentage of dockage received at the 265 elevators studied was distributed as follows:

Percentage dockage	Number of elevators
20	1- 9
78	10-14
90	15-19
53	20-24
17	25-29
7	30 and over

Cleaning Flaxseed

Pigeon grass, mustard seed, buckwheat, water grass, and wild oats are the seeds most commonly found in flaxseed produced in the Midwest. Most of these weed seeds are also present in other grain crops, but they are much more difficult to remove from flaxseed because of similarity in dimensions. Many elevators find it difficult to clean all the flaxseed as it is received during the harvest season. Stored flaxseed may be cleaned later, but delay increases the hazard of spoilage, and dockage occupies needed bin space during the busy harvest season.

While most other grains can easily be cleaned to less than 2 percent of dockage, it is not economical or practical for country elevators to clean flaxseed to that extent for shipment to terminal markets. In doing so, a great deal of cracked flaxseed and smaller kernels would be removed, causing greater monetary losses than the additional freight cost of shipping the dockage.

The range in dockage between individual carloads of flaxseed received in the Minneapolis market continues to be very wide. A majority of the cars contain between 5 and 20 percent dockage in normal years, but receipts as low as 2 and above 20 percent are not uncommon. In a study made by the Agricultural Economics and Extension Divisions of the University of Minnesota in 1941-42, the receipts of over 9,000 carloads of flaxseed in Minneapolis contained an average of 11.3 percent dockage, ranging from 3 to 37 percent. 3/ One-third of the cars had less than 10 percent; one-half, 10 to 15 percent; and one-fifth, 15 percent or more of dockage. No evidence was found to indicate any material improvement in dockage between the 1921 to 1941 seasons. Since 1941, the average percent of dockage has varied, although the general trend is toward smaller amounts of dockage.

The 265 elevators studied cleaned varying percentages of flaxseed as follows:

Percentage of flaxseed cleaned	Number of elevators
0	90
1-24	12
25-49	11
50-74	25
75-99	46
100	81

These elevators shipped to terminal markets flaxseed containing an average of 10.3 percent dockage. Elevators that did not clean any of the flaxseed they purchased shipped over 2½ times as much dockage as did those elevators cleaning all flaxseed handled and nearly twice that of those cleaning part of their receipts (table 1).

3/ Cox, R. W. and Brookings, W. W. Dockage in Flaxseed. Minn. Agr. Expt. Sta. Bul. 371, 1943, p. 3.

Table 1.-- Dockage in flaxseed received, removed, shipped, and moisture content of flaxseed at country elevators, 1955-56

Flaxseed elevators	Average dockage content per bushel			Average moisture content per bushel
	Received	Removed	Shipped	
	Percent	Percent	Percent	Percent
By amount of flaxseed cleaned:				
All	17.8	11.7	6.1	8.8
Some	16.4	7.9	8.5	8.5
None	15.7	--	15.7	8.7
By States:				
North Dakota	16.3	5.6	10.7	8.7
Minnesota	14.6	5.8	8.8	8.7
South Dakota	20.0	8.7	11.3	9.2
3-State **average**	16.3	6.0	10.3	8.7

The group of elevators cleaning all flaxseed purchased indicated receiving a larger proportion of dockage than elevators cleaning part or none. About two-thirds of the dockage was removed at the elevator, as only one-third of it was shipped to terminals with the flaxseed. This practice resulted in substantial freight savings plus revenue from the sale of screenings. When storage space is available and sufficient cleaning time is not, some elevators may delay dockage removal, especially when the grain is to be stored for some time prior to shipping. Less effort need be made to keep purchases separated according to the percent of dockage at elevators cleaning all flaxseed than at those cleaning only part of their receipts, since it all will eventually be cleaned.

Two aspects should be noted regarding the proportion of flaxseed to be cleaned: The volume handled and the variations in moisture content of flaxseed received by the different elevators.

Volume Handled.--About 35 percent of the elevator operators clean only a part, or about 60 percent, of their total flaxseed receipts. The average annual volume of flaxseed handled by these elevators is somewhat larger than that handled by the elevators cleaning all flaxseed purchased, and twice that of the group which did not clean any flaxseed, yet their total storage capacity is not proportionally larger, indicating a greater use of the facilities for flaxseed operations. Many of these elevators clean only flaxseed containing a high proportion of dockage, or often clean only all flaxseed received containing over 10 percent dockage. The portion cleaned is screened to about

6 to 7 percent dockage content. Because fewer bushels are cleaned by this practice, fixed costs per bushel on the cleaning equipment are larger than at elevators cleaning all flaxseed receipts, but variable costs, particularly for labor and power, are reduced.

Although some elevator operators do not possess a cleaner, many who do not make a practice of cleaning flaxseed for market maintain equipment suitable for removing at least part of the dockage. Often line elevator companies do not make a practice of cleaning any flaxseed because of inadequate facilities or of the great risk of losing flaxseed in the screenings. These operators may underestimate the costs resulting from the handling and shipping of large amounts of dockage with their flaxseed. The cost of cleaning facilities can be recovered in a 10-year period when only about 10,000 bushels of flaxseed are cleaned annually. As the annual volume of flaxseed handled at elevators surveyed averaged nearly 30,000 bushels for those elevators which presently do not clean any flaxseed, it would be profitable to operate the cleaning equipment they may now own or to install cleaning facilities.

Estimated returns from flaxseed marketing are increased as greater amounts of dockage are removed at the country elevator (table 2). Elevators not cleaning flaxseed often find themselves at a disadvantage and unable to compete with a nearby elevator which cleans flaxseed. The question arises as to the advantages between elevators cleaning all and those cleaning part of their flaxseed receipts. Whether or not the prior method is economically advisable depends upon many individual considerations such as the time, labor, and storage requirements. If these factors were not considered, it would be to the advantage of each elevator to clean all flaxseed receipts because per-bushel returns are approximately 1.5 cents greater than that at elevators cleaning only part of the total receipts. Cleaning costs per bushel would be lower and the returns from screening sales plus reduced freight rates would prove this method to be the most profitable. Because of the length of time needed to clean all flaxseed receipts, elevators handling sizable volumes may find such a practice impractical if a high turnover of market grain is to be retained.

Variation in Moisture.--The second aspect of operations of elevator cleaning concerns variations in the moisture content of flaxseed received. Generally, dockage contains more moisture than the flaxseed at harvest time and the immediate removal of dockage results in the elimination of a large proportion of the moisture before it has a chance to transfer to the flaxseed. Flaxseed to be cleaned should be selected on the basis of moisture content of the flaxseed and dockage, as well as on the basis of quantity of dockage in cases where receipts are not all cleaned. Although climatic factors are important to moisture content, table 1 shows that the moisture content was highest in South Dakota where the average percentage of dockage was also the highest. The moisture content was lowest at elevators cleaning only part of their flaxseed, because the seed was usually cleaned upon receipt. Where this operation was delayed at elevators cleaning all receipts, the effect was the same as if it had not been cleaned at all. The advantages and disadvantages of partial cleaning must be weighed according to the individual situation.

Table 2.--A comparison of the costs per bushel of handling flaxseed and wheat containing varying amounts of dockage

Costs and returns	Wheat at $2 per bu.	Flaxseed at $3 per bu.		
	2 percent dockage	5 percent dockage	10 percent dockage	15 percent dockage
	Cents	Cents	Cents	Cents
At the elevator:				
Shrinkage 1/	1.03	3.50	3.00	2.50
Interest 2/	.50	.75	.75	.75
Insurance 3/	.14	.19	.19	.19
Boxcar preparation 4/	.08	.36	.36	.36
Freight on dockage 5/	.44	1.33	2.81	4.47
Cleaning 6/	.30	1.81	1.00	--
Other operating expenses 7/	1.49	1.49	1.49	1.49
Depreciation 8/	1.07	1.07	1.07	1.07
Total estimated cost	5.05	10.50	10.67	10.83
Return to merchandising:				
Estimated gross margin	6.00	10.00	10.00	10.00
Return on screenings 9/	.72	3.36	1.68	--
Total estimated return	6.72	13.36	11.68	10.00
Estimated return above cost	1.67	2.86	1.01	-.83

1/ Shrinkage on wheat of 1.01 percent (0.52 percent handling loss). Shrinkage on flaxseed at 1.53 percent (1.10 percent handling loss).

2/ Based on a 15-day storage and handling period during which the elevator pays interest on borrowed money.

3/ Based upon weighted average rates for wood crib, steel and concrete structures during a 1-month period.

4/ Based upon a 1,800-bu. carload costing $6.48 per car for flaxseed and $1.44 per car for wheat.

5/ Based upon average 3-State freight rates of 22.60 cents per bushel of wheat and 25.31 cents per bushel of flaxseed.

6/ Based upon total receipts of 40,000 bu. of flaxseed and wheat each cleaned to the 5 percent and 2 percent dockage level, respectively; and 30,000 bushels of flaxseed cleaned to 10 percent dockage, representing part of total receipts, so that only one-half of the cleaning cost is chargeable.

7/ Based on 549,000 bushels merchandised grain and 91,000 bushels stored grain with operating expenses at $18,000. Twenty-five percent of the operating costs are charged to stored and 75 percent to merchandised grain. Only 60 percent of the total cost is charged to the grain operation; the remaining 40 percent is allocated to sideline operations.

8/ Based on $200,000 fixed building costs with a 20-year depreciation period and $40,000 fixed equipment cost with a 10-year depreciation schedule.

9/ Based on 0.6 cent per pound value of screenings.

Cleaning Costs

The cost of cleaning flaxseed generally decreases as the volume of flaxseed cleaned increases because fixed costs are spread over a greater number of bushels. Variable costs per bushel, however, continue at nearly the same level. The exact point at which it becomes practical to install a cleaner is difficult to pinpoint. This depends on the volume of all grains passing through a cleaner, the average percent of dockage or foreign material contained in the grain, and the labor and time available for cleaning purposes. In order to determine the advantages of the cleaning operation, both fixed and variable costs must be considered.

Fixed Costs.--Fixed costs usually make up a large part of the total cost at elevators cleaning only small volumes of flaxseed, as expenses of this type are not directly associated with the volume of grain cleaned. In table 3, one-third of the fixed cleaning costs were allocated to flaxseed, although at many elevators the charge against flaxseed was much lower. The most important fixed cost item to be considered is that of the cleaning equipment, which may cost up to $4,000 or more, depending on the type of equipment. Cleaners remove trash, chaff, and weed seeds, reducing dockage content to 5 to 8 percent. Flaxseed cleaning costs are much higher than for other grains. When fine screens are used, the machines handle 50 to 75 bushels of flaxseed per hour. With a different set of screens, 250 bushels of wheat may be cleaned during a similar period. When coarse screens are installed, 150 bushels of flaxseed and 800 bushels of wheat may be cleaned per hour. Graders or aspirators which clean flaxseed down to 10 to 12 percent dockage at rates from 50 to as high as 250 to 300 bushels per hour may be purchased from $800 to $1,400.

If finishing machines are used to supplement the market cleaning, dockage can be reduced to 1 to 3 percent or less, although such flaxseed is usually shipped containing 2 to 6 percent dockage. However, greater shrinkage losses result as small and broken kernels pass into the screenings. In addition to the actual cost of cleaning equipment, the cost of installation must be included. This will vary depending upon such factors as floor accessibility, layout, and headroom, but installation costs can be normally placed at $50 to $75.

Insurance coverage is generally based on 80 percent of the replacement value of the buildings and equipment. The cost of coverage on the cleaner is at the same rate as the remainder of the elevator's equipment, which varies between elevators according to the type of warehouse construction. When cleaning equipment is installed, insurance rates are raised on the building, other equipment, and the grain as a result of increased fire hazards. The additional costs of insurance on steel cleaning equipment are 3 cents per $100 on plant, equipment, and grain inventory. The costs for wooden cleaning equipment are 6 cents per $100 above rates for a similar elevator without a cleaner.

Taxes, like insurance, are assessed in relation to the fixed assets of the elevator and based upon each $100 of value. Although wide variations exist in the assessed valuation, the per-bushel cost of property taxes is not large since the cost can be spread over a large volume of grain.

Table 3.--Costs per bushel of cleaning flaxseed for market

Item	Bushels of flaxseed cleaned					
	5,000	10,000	20,000	30,000	40,000	50,000
	Cents	Cents	Cents	Cents	Cents	Cents
Fixed costs: 1/						
Depreciation 2/	2.666	1.333	0.666	0.444	0.333	0.266
Increased insurance on buildings, equipment, and grain 3/	.300	.150	.075	.050	.038	.030
Insurance on cleaner 4/..	.165	.082	.041	.028	.021	.017
Installation 5/	.033	.017	.008	.006	.004	.003
Property tax 6/	.182	.081	.046	.030	.023	.018
Total fixed cost	3.346	1.663	.836	.558	.319	.334
Variable costs:						
Power and light 7/	.174	.174	.174	.174	.174	.174
Maintenance and repair 8/	.452	.286	.214	.176	.162	.154
Labor 9/	1.053	1.053	1.053	1.053	1.053	1.053
Total variable costs..	1.679	1.513	1.441	1.403	1.389	1.381
Total cost	5.025	3.176	2.277	1.961	1.808	1.715

1/ For the basis of this analysis, 1/3 of the fixed costs were allocated to flaxseed and 2/3 to all other small grains.

2/ Based upon $4,000 cleaning equipment cost over a 10-year period.

3/ Insurance rate of 3 cents per $100 value on $120,000 of building and equipment, and grain valued at $30,000.

4/ Insurance is based upon the percentage of each type of construction with costs of 15, 35, and 95 cents per $100 value for concrete, steel, and wood structures, respectively.

5/ Installation costs $50 spread over 10-year period.

6/ Based on $1.37 per $100 value at ½ of original $4 cost.

7/ Power and light are calculated on the basis of kilowatt hours for a 7½ h.p. 220-volt motor using 4.84 kilowatts per hour. The charge for electricity is based on a rate of 2.7 cents per kilowatt. The cleaner is operated at the rate of 75 bushels per hour.

8/ Maintenance and repair of cleaning equipment cost from $30 to $120 per year (excluding labor), depending on the use and age of the cleaner. One-third of cost is allocated to flaxseed.

9/ Based upon a salary of $300 per month for a 60-hour week during the harvest season. Two-thirds of this salary is allocated to the cleaning operation.

Variable costs.--To the fixed costs must be added the variable or actual operating costs of the cleaner. Included are power and light, for which rates vary slightly at different localities. Generally, however, the rate differences do not greatly affect the per-bushel cost of operation. The use of power is usually quite constant per bushel. An elevator using approximately 2,000 kw.-hr. per month pays about 2 to 3 cents per kilowatt-hour.

Labor costs, also part of the variable operating cost, like power and light, remain relatively constant for each bushel of flaxseed cleaned. The volume of flaxseed cleaned per hour varies somewhat with the amount of dockage. Flaxseed containing a high percentage of dockage takes longer to clean than seed containing a lower percentage, due to the increased bulk that must pass through the machine to obtain an equal net volume of flaxseed. This difference, however, is compensated for by the increased amount of screenings sold.

Another variable operating expense is maintenance and repair. Certain aspects make these costs relate directly to the volume of grain handled while others do not. Generally, these costs increase with volume increases, but at a decreasing rate. An elevator with twice the volume may have only $1\frac{1}{2}$ times the total cost in maintenance and repair.

Freight Costs

Through the use of cleaning equipment, the handling and storage costs resulting from excessive dockage can be minimized, especially those on the freight. An elevator shipping flaxseed containing 15 percent dockage must pay over 3 cents per bushel more for freight than an elevator shipping flaxseed containing only 5 percent dockage. For each carload shipped to market with 15 percent dockage, nearly $46 of the net return is paid for the transportation of dockage. The margin many elevators require for a profitable operation is often lost through dockage freight charges. The loss due to dockage or foreign material in flaxseed is considerably greater than for other grains. On wheat, for example, the percent of dockage may be as high as 5 percent, although it is shipped more often at about 2 percent. Therefore, where slightly less than 0.5 cent per bushel is lost on wheat, close to 3 cents of the possible margin on flaxseed containing 10 percent dockage is lost because of the increased freight costs (table 4).

As freight rates increase with distance, a larger percentage of the gross returns are deducted for freight at more distant elevators. For example, the cost of freight on flaxseed with 15 percent dockage shipped 100 miles to market is 2 cents, but 5 cents at 400 miles. The importance of the additional freight cost may be underestimated by elevator operators, especially those shipping flaxseed containing a relatively larger amount of dockage. At most elevators cleaning 10,000 bushels of flaxseed or more, the savings on freight costs alone will more than offset the cost of cleaning. Returns from the sale of screenings in effect become a bonus.

Generally, the terminal markets do not pay country elevators for dockage in carloads of flaxseed. When, however, the proportion of dockage is high and the demand for screenings strong, a premium is sometimes paid on the net

Table 4.--Estimated average railroad freight rates for flaxseed shipped from Minnesota, North Dakota, and South Dakota, to Minneapolis, Sept. 1957

Percentage of dockage	Freight per net bushel	Additional cost per bushel for dockage	Costs per carload for dockage 1/
	Cents	Cents	Dollars
0	25.31	---	---
5	26.64	1.33	22.78
10	28.12	2.81	45.56
15	29.78	4.47	68.34
20	31.64	6.33	91.12
25	33.75	8.44	113.90
30	36.16	10.85	136.67

1/ Based on boxcar containing 1,800 gross bushels of flaxseed.

flaxseed for the dockage material received. Premiums are not generally paid unless the dockage content of a car is 20 to 25 percent or more. Premiums of 1 to 3 cents per bushel do not usually cover the elevator's cost of transporting the dockage to a terminal market. When the dockage contains valuable screening material, or a large proportion of other grains which may be easily separated from the flaxseed, larger premiums of as much as 10 cents per bushel or more are sometimes paid. This practice is not common with most receipts as a result of the high cost of cleaning, which totals approximately 3½ cents for the cleaning charge itself, 2½ cents for transportation within the yards, and 1 cent for miscellaneous charges such as weighing. When flaxseed is cleaned, the shrinkage of dockage of about 3 to 5 percent is much greater than that of the flaxseed itself. High returns are, therefore, required to cover these costs and losses. Paying premiums may be more common during one season than another, depending upon the value of the screenings.

Other Advantages of Dockage Removal

Elevators cleaning flaxseed may benefit by obtaining: Returns from the sale of screenings (see section on "Flaxseed Screenings"), reduced freight costs, and less loss from heat damage. For example, during the harvest season, elevators are often handicapped by the lack of storage and operating space. If the flaxseed were cleaned, the quantity of cleaned flaxseed that could be held by the elevator would be increased by the volume of space occupied by the removed dockage. Most elevators will be able to hold 8 to 10 percent more flaxseed.

Boxcar shortages, like storage shortages, are common during the harvest season. When the percentage of dockage content is reduced, more flaxseed can be shipped. Another advantage is that a more uniform carload can be achieved through cleaning, facilitating more accurate method of dockage determination at the terminal market. Some managers feel that for this reason alone flaxseed should be cleaned. An elevator operator does not have enough bins to keep each grower's flaxseed separate and, therefore, may store or ship in one carload flaxseed containing 5 percent dockage with that having 15 to 20 percent or more dockage. When probes are made to obtain a sample at the terminal market in such unevenly loaded boxcars, often a larger or smaller proportionate amount of high-dockage flaxseed is withdrawn. Often either the buyer or seller may appeal for a resampling.

Generally, greater accuracy and uniformity in determining dockage content of flaxseed is obtained at the terminal markets than at widely scattered country buying points. Each grain buying firm has its own sampler or inspectors in addition to the grain inspection services from the State and Federal Grain Inspection Divisions. Most firms have the air-type dockage testers and experienced personnel to separate manually weed seeds that are difficult to separate from the flaxseed. Also the small and broken seeds of flaxseed passing through the sieves with the dockage,which can be recovered by proper rescreening or recleaning,are separated by hand and returned to the flaxseed portion of the sample. The Grain Division of the Agricultural Marketing Service, USDA, in Minneapolis handles grade appeals. In flaxseed marketing, over 90 percent of such appeals are made because of dockage.

Insurance

Except for dockage, insurance was cited more often by elevator managers as a cost-contributing factor, even though insurance does not constitute a very important part of the marketing costs of either flaxseed or wheat. The insurance premium on merchandised grain is small since the length of storage or ownership is relatively short. Costs of insurance become greater when grain is placed in storage or when limited transportation facilities delay the outshipment of grain from elevators.

The insurance premiums are based on the value of the grain as well as on the plant and equipment. The insurance cost of the grain is a variable expense depending upon the weekly or monthly average stocks held during the year and upon the kind and value of the grain held. As a bushel of flaxseed is more valuable than a bushel of any other grain, its insurance costs are proportionally higher. For example, the cost of insuring flaxseed worth $3 a bushel is one-half higher than for wheat at $2.

The cost of insurance on the building and equipment becomes a fixed expense, however, as usually the policy covers a large part of the replacement cost. The cost per bushel of this coverage varies with the volume of grain handled. Thus, the annual insurance premium may be quite large but, because the turnover of merchandised grain is rapid, the cost per bushel becomes negligible.

The type of elevator construction influences the marketing cost, even for the short time flaxseed is held at elevators before terminal delivery.

Co-insurance rates, available when generally 80 percent or more of the plant and equipment and grain are covered, are available on concrete and steel structures, but not on wood crib units. Insurance rates are, as a result, over 6 times greater for wood than for concrete units (table 5).

Table 5.--Monthly average grain insurance cost on 1,000 bushels of stored flaxseed and wheat by type of elevator construction

Grain	Price per bushel	Type of construction				
		Wood crib	Concrete silo		Steel silo	
		Gross	Gross	Co-insurance	Gross	Co-insurance
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Flaxseed	3.00	2.00	1.13	0.33	1.20	0.83
Wheat	2.00	1.33	.75	.22	.80	.55

Agencies in each of the 3 leading flaxseed producing States require insurance coverage to protect not only the grain but also the ability of the elevator to function as a public service.

Shrinkage

Next to the cost of handling excessive dockage, shrinkage losses are the most expensive cost per bushel of flaxseed marketing by country elevators. Because of the higher price per unit, shrinkage losses in flaxseed become more costly than similar losses in other grains. In addition, total shrinkage in flaxseed from the time of purchase to sale averaged 1.53 percent at 175 elevators, or about 50 percent greater than the average of 1.01 percent shrinkage found in other grains. Less than one-third of the total shrinkage occurred during storage, so an average of 1.1 percent of the flaxseed was lost as a result of handling. When flaxseed is worth \$2 to \$3.36 per bushel, the monetary loss due to 1.53 percent shrinkage would range from 3 to 5 cents per bushel, depending on the price. Such a loss is high compared with about 0.25- to 1-cent loss per bushel for oats, which sell for \$0.35 to \$1 per bushel, and 1.5- to 2.5-cent shrinkage loss per bushel for wheat selling for \$1.50 to \$2.50 per bushel.

At two-thirds of the elevators surveyed, shrinkage losses were found to be greater in flaxseed than in other grains handled. Of the remaining one-third of the elevator operators who found shrinkage in flaxseed to be the same as in all grains, some: (1) Had good facilities and did not experience greater shrinkage losses in flaxseed than in other grains handled, (2) did not find shrinkage losses to be significant, or (3) took additional dockage to allow for such losses.

Shrinkage occurs from: (1) Elevating, conditioning, and moving flaxseed within the elevator, (2) removing small or broken flaxseed kernels along with dockage in the cleaning process, (3) loss of moisture between the time of purchase and sale, (4) loading out flaxseed into boxcars or trucks, and (5) leakage of seed en route to terminals.

When flaxseed is delivered to the elevator, any losses in weight or the risk of such losses becomes the responsibility of the elevator. Most of the losses are due to leaky grain conveyors within the elevator legs, poorly adjusted distributor heads, faulty storage bins, spilling over bins, or evaporation of moisture. The small size and slippery nature of flaxseed makes it especially susceptible to these causes for shrinkage.

It should be noted that shrinkage losses vary sharply among elevators, but when such losses are high in flaxseed, they are also above average in wheat and other small grains. The variations among elevators generally result from differences in maintenance of elevating equipment. Some shrinkage occurs every time grain is moved from one location to another. Where equipment is defective or out of adjustment, or where bins are in need of repair, shrinkage losses are substantially higher in elevators. Efficient operation can be more easily attained, therefore, when the elevator operator maintains his equipment in proper adjustment, so that all shrinkage losses are minimized.

There is also a loss of flaxseed during cleaning as some small and cracked kernels are not recovered from the screenings. A study in 1943 found that "removal of all weed seeds and foreign material generally results in a shrinkage of at least 15 percent to 20 percent from the original amount of flaxseed, both sound and broken flaxseeds being removed in the cleaning." 4/ Losses in cleaning generally increase proportionally with the amount of dockage removed. For example, shrinkage is not as great in flaxseed cleaned to 7 to 10 percent dockage content as it would be if the seed were cleaned to the 2 to 5 percent dockage level, where larger amounts of the smaller and broken seeds are screened off. For this reason, flaxseed cleaned and shipped to terminal markets generally contains a small amount of dockage, as the losses incurred in further cleaning may be greater than the savings in freight costs.

Shrinkage from moisture evaporation is greatest immediately following harvest, although such losses will continue, but at a slower rate. Moisture loss is dependent upon the amount of moisture in flaxseed at the time it is received and upon climatic conditions during the marketing period. Shrinkage losses often are high if flaxseed is received at 10 percent or more moisture. If the seed contains less than 7 to 8 percent moisture, however, an accumulation of moisture from humid air between the time of purchase and sale may increase the weight.

Boxcar Preparation

Generally, trucks are maintained in relatively good condition while boxcars need to be repaired before they can be used. According to the elevator

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4/ Cox, R. W. and Brookings, W. W. Dockage in Flaxseed. Minn. Agr. Expt. Sta. Bul. 371, 1943, p. 8.

managers surveyed, only 39 percent of the boxcars as they reach the elevator are suitable for shipping flaxseed, and only 41 percent more can be made suitable by the elevator company. Thus, 80 percent of the boxcars received are either suitable or can be made suitable for flaxseed. Of the remaining 20 percent, 16 percent were repaired and used for grains other than flaxseed and 4 percent were rejected for use in the transporting of all grains. Managers specifying that they intend to ship flaxseed are usually sent better boxcars. Sometimes, however, such selectivity may lead to delays in receiving the cars and may require the temporary storage of the flaxseed in much needed elevator space. When a well-maintained boxcar is obtained, a manager may use it for flaxseed, even though he intended it for another grain.

Labor and materials constitute the major costs of boxcar preparation. Before any flaxseed can be loaded into boxcars, the car must be thoroughly cleaned and repaired to prevent losses from leakage and the entrance of moisture. Grain doors must be installed on all boxcars, and cars used for flaxseed must be fully lined with paper. Conversely, boxcars used for other grains are only partially lined or not lined at all.

The costs of preparing boxcars for flaxseed ranged from $1 to $10 according to the differences in the condition of the cars as they are received. The cost of repair and lining boxcars for flaxseed averaged about $6.50 per car or slightly over 0.33 cent per bushel. The cost of boxcar preparation for other grains, such as wheat, averaged about $1.50 per car, or less than 0.1 cent per bushel. The unit cost per bushel is reduced as the number of bushels increases up to the car capacity. There is, however, no correlation between the annual volume of flaxseed handled by an elevator and the cost of boxcar preparation.

Interest on Additional Working Capital

Elevator marketing costs are affected by the capital that may be required to purchase grain from growers during and after the harvesting season. However, as discussed later, some operators employ selling methods which minimize these additional capital needs. Flaxseed, because of its higher value, requires one-third more working capital and interest costs than an equal volume of wheat, for example.

Commission companies, which generally finance the individual elevators, charge about the same interest rates and impose similar terms as banks. Currently, a 6-percent interest charge is made on all money used in financing the purchase of grain. Interest rates are kept as low as possible since the commission companies regard financial assistance to elevators as more of a service than a means of making a profit.

When a grower delivers grain to an elevator, he usually has a 10- or 15-day free storage period in which to decide whether to store or sell. An elevator manager, knowing approximately what proportion of each grain he shall purchase, often uses the free storage period to advantage by immediately shipping a portion of the grain to a terminal for sale. The result is that the elevator receives payment at about the same time the grower appears for his check and no working capital or interest cost accrues. Such practices would lower the interest cost cited in table 2.

Risk

It is important that an elevator manager prevent any loss in the quality of the grain he is marketing. Fifteen percent of the managers interviewed considered the risk of quality losses an important reason why it costs more for them to market flaxseed than other grains. Risk, according to these managers, includes revenue losses to the elevator which are associated with damaged grain. While damage is no more important in flaxseed than it is in other grains, it takes greater care and vigilance to prevent its occurrence, thus making it more costly. Again, the high value per unit of flaxseed increases its marketing risk.

Flaxseed is easily subject to heat damage from (1) high moisture within the seed or dockage itself, (2) high temperatures, (3) humid weather during the marketing period or, (4) rain blowing into the storage or transportation unit. The Department of Agriculture has found that carlots of flaxseed containing from 10.1 to 10.5 percent of moisture sometimes spoil in transit in warm weather, and that damage frequently occurs when the flaxseed contains more than 10.5 percent moisture. In some years, hundreds of cars of flaxseed too wet for safe storage are shipped to market. The moisture problem becomes more serious when grain is stored for an extended period of time.

Damage caused by insects and rodents is generally less important in flaxseed than in edible grains such as wheat. Therefore, no allocation of such risk costs was made in table 2, as the risk of handling wheat would be at least as great as that for flaxseed. When quality losses in flaxseed exist in any sizable quantity, the losses are apt to reduce the elevator's gross marketing margin.

Bin Repair

The cost of bin repair, although less important as a factor in merchandising flaxseed, contributes to higher handling costs to the elevator. Structural defects or weaknesses sometimes result in losses from spillage, slow leakage, or accidental mixing of grains. Special care is required if flaxseed losses are to be minimized. Although all bins should be kept in excellent repair, it is particularly important that the bins used for flaxseed be free from rodent and potential weather damage, since the loss of a bushel of flaxseed is much more costly than a similar loss of another grain. Generally, elevator managers will select their better bins for holding flaxseed. The cost of bin repair, included in table 2 under operating expenses, was not, however, considered directly applicable to flaxseed since all grains benefit from improved bin condition.

Other Costs

In addition to the costs which have already been noted, there are many others which must be included in order to determine accurately the total cost of grain marketing. These include both variable and fixed expenses. Although both are important, the variable expense consitutes a large part of the total cost of merchandising. The variable costs are often broken down into 2 subclassifications. The first includes expense items such as utilities, advertising, auditing, repairs and director's fees. These costs respond slowly to changes in volume. For example, as the quantity of electricity used increases, the cost per kilowatt hour decreases until a minimum rate is reached. Other cost items in this group also have minimums below which the costs do not fall.

A few operating expenses such as interest on borrowed capital, insurance on grain stocks, and part-time labor hire correspond directly to changes in volume handled. Some of these have been listed separately in table 2.

A second group of expenses are listed as fixed or constant cost items. Often these costs constitute 10 percent or more of the value of the capital assets; thus, $10 invested in buildings and equipment may result in $1 of fixed cost. The rates of depreciation are higher on equipment than on the elevator building, so the ratio on equipment is greater than the combined average.

Also included as fixed costs are personal property taxes, warehouse bonds and licenses, and leases. Usually the costs per bushel from these and other fixed costs are not large when elevators have a sufficient volume of grain in relation to their total capacity. A distinct advantage then exists in favor of the large volume handlers.

Since many elevators carry on a large sideline operation, 60 percent of the fixed and variable costs in table 2 were allocated to the grain operation. As this study only considers merchandised grain, this 60 percent was reallocated between stored and merchandised grain. Although stored grain involves less than one-sixth of the grain handled annually by the country elevator, a greater allocation is made to it because of the additional length of time it remains in the elevator.

MARKETING COSTS AND MARGINS

Except for grade and quality differences, prices paid to farmers for flaxseed are dependent primarily upon the total national and world supply of and the demand for linseed oil and meal, both of which influence Commodity Credit Corporation support prices. Of considerable importance, however, are the marketing costs and margins between country-elevator assembly points and terminal markets where flaxseed is received for processing. A small part of these marketing charges has become a fixed cost per bushel, while others are directly related to the distance flaxseed must be moved.

Figure 3 shows the average railroad freight rates per bushel by crop reporting districts for flaxseed delivered to the Minneapolis terminal market. Also shown is the average price paid to farmers for flaxseed delivered to the elevators. Those elevators located closest to the Minneapolis terminal market returned to farmers, on an average, 20 cents a bushel more than did elevators in the western areas of North Dakota and South Dakota. Thus, as the distance from the country elevator to the terminal market increases, the price paid to farmers decreases.

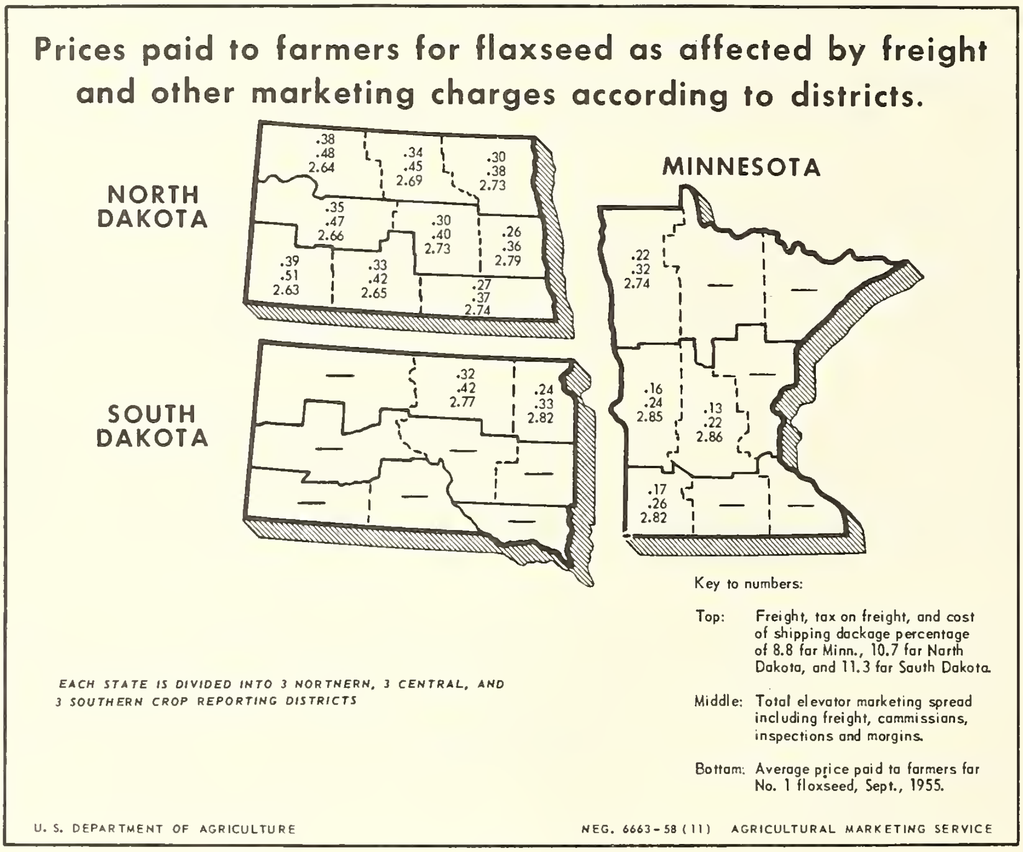

Prices paid to farmers for flaxseed as affected by freight and other marketing charges according to districts.
NORTH DAKOTA
.38 .48 2.64
.34 .45 2.69
.30 .38 2.73
.35 .47 2.66
.30 .40 2.73
.26 .36 2.79
.39 .51 2.63
.33 .42 2.65
.27 .37 2.74
SOUTH DAKOTA
.32 .42 2.77
.24 .33 2.82
MINNESOTA
.22 .32 2.74
.16 .24 2.85
.13 .22 2.86
.17 .26 2.82
EACH STATE IS DIVIDED INTO 3 NORTHERN, 3 CENTRAL, AND 3 SOUTHERN CROP REPORTING DISTRICTS
Key to numbers:
Top: Freight, tax on freight, and cost of shipping dockage percentage of 8.8 for Minn., 10.7 for North Dakota, and 11.3 for South Dakota.
Middle: Total elevator marketing spread including freight, commissions, inspections and margins.
Bottom: Average price paid to farmers for No. 1 flaxseed, Sept., 1955.
U. S. DEPARTMENT OF AGRICULTURE
NEG. 6663-58 (11) AGRICULTURAL MARKETING SERVICE

Figure 3

Normally, all grain moving from the local elevators to the terminal markets by common carrier is shipped according to uniform class rates which are applied on a 100-pound basis. Flaxseed is the one exception to the uniform class rate for grain. The charges for flaxseed shipped by rail are 112 percent of the normal grain rate. Truckers levy a 3-cent-per-bushel charge for flaxseed above the regular grain rate. The higher rate is charged on the basis of the higher unit value of flaxseed and the additional risk involved.

As shown in table 6, freight charges of railroads, which move the bulk of the 3-State flaxseed crop to Minneapolis, account for about 70 percent of the country elevator's marketing spread between the farmer seller and the terminal purchaser. These costs, including freight on dockage and the 3-percent Federal tax, account for 73 percent of the marketing spread in North Dakota as compared with 56 percent for the closer elevators of Minnesota. Other charges related to transportation, including commissions and inspections, totaled 10 percent for the 3-State area. The cost of shipping dockage amounted to 7.3 percent of the total marketing spread, or an average of 2.90 cents per bushel. This varied from 1.60 cents in Minnesota to 3.35 cents in North Dakota.

Table 6.--Average elevator marketing spread and costs for flaxseed shipments by railroad to Minneapolis from elevators in Minnesota, North Dakota, and South Dakota

Item	North Dakota		Minnesota		South Dakota	
	Cts./bu.	Pct.	Cts./bu.	Pct.	Cts./bu.	Pct.
Costs:						
Freight and tax 1/	27.98	65.4	16.55	51.3	23.19	61.8
Freight on dockage	3.35	7.8	1.60	5.0	2.95	7.9
Other transit charges 2/	4.09	9.6	4.04	12.5	4.06	10.8
Gross elevator margin	7.36	17.2	10.07	31.2	7.30	19.5
Total elevator marketing spread	42.78	100.0	32.56	100.0	37.50	100.0
Marketing margins:	Cts./bu.		Cts./bu.		Cts./bu.	
Gross elevator margin	7.36		10.07		7.30	
Returns from screenings	1.88		1.95		2.95	
Total	9.24		12.02		10.25	
Less handling costs 3/	8.06		8.34		8.11	
Net return	1.18		3.68		2.14	

1/ Freight rates are based upon the intrastate rate in Minnesota and interstate rate in North Dakota and South Dakota. Freight rates are based upon a gross bushel which includes an average percent of dockage of 10.7 for North Dakota, 8.8 for Minnesota, and 11.3 for South Dakota, averaging 10.3 percent for the 3 States.

2/ Other charges include: Commission, sampling, weighing, holding, demurrage and reconsigning, Federal appeals, and inspection.

3/ Includes elevator's cost for: Shrinkage, insurance, interest, boxcar preparation, cleaning cost, and fixed and variable expenses.

The gross marketing margin on flaxseed for country elevators averaged 7.88 cents per bushel, or about 20 percent of the total elevator-terminal market spread. The gross margin is the difference between the total market spread and the costs of transportation. Where the transportation charges for Minnesota-grown seed average 12.5 cents less than those for either of the Dakotas, Minnesota farmers receive only 10 cents a bushel more. Minnesota elevators thus obtain a larger net operating margin, as shown in table 6.

Generally, in areas where competition is keen, margins fall below the average, while in areas having fewer elevators, margins tend to be somewhat higher. Marketing margins are often substantially higher for flaxseed than for any of the other grains handled by country elevators. For example, a manager attempting to obtain a 5-cent margin on wheat is apt to seek a 7- to 10-cent margin on flaxseed. The reasons necessitating a relatively high flaxseed marketing margin are cited in the section on the comparative costs of flaxseed marketing.

Marketing margins at some elevators vary during the marketing year, although the majority of managers attempt to maintain the same level on a year-round basis. Competitive pressure among elevators often forces margins down during the harvesting season in some areas. By voluntarily reducing its margin, an elevator may be able to increase the price offered to producers and thereby obtain a larger volume of flaxseed. The additional returns from the increased volume and the resulting handling cost decreases may more than offset the reduced margin. Thus, lower margins may be desirable when adequate increases in volume can be obtained.

Some elevators that provide good service and maintain relatively low margins and offer high prices throughout much of the year may be successful in increasing their margins during the harvest season and still retain their flaxseed grower clientele. Sometimes an operator obtains a lower margin when purchasing an individual lot from a producer who has made prior storage payments on the flaxseed. When operating profits are realized at cooperative elevators, a part of the marketing margin is returned to the producers in the form of stock dividends or cash patronage refunds.

The average costs involved in the shipment of 27 carloads of flaxseed from North Dakota elevators during 1956 are shown in table 7. Almost 75 percent of the total marketing cost between the farm seller and the terminal buyer is due to freight and taxes on freight. Included in the 31-cent freight charge is the cost of shipping dockage which averaged 3.11 cents per bushel, or $44.88 per car, for the 27 carload shipments.

The dockage content of the 27 carload shipments ranged from 2 to 23 percent. The 4 elevators shipping flaxseed containing 2 percent dockage paid only $9.66 per carload for the dockage compared to $72.26 paid by the 3 elevators shipping an average of 22 percent dockage.

Besides freight and taxes, other charges, including commission, inspection, weighing, and sampling, appeared on all sales account slips. These

Table 7.--Rail transportation charges and margins for flaxseed shipped to Minneapolis from North Dakota elevators 1/

Item	Average charges Per bushel	 Per carload	 Proportion of total
	Cents	Dollars	Percent
Freight 2/	31.09	462.38	74.25
Commission	3.39	50.37	8.09
Terminal inspection	.20	2.90	.46
Weighing	.15	2.23	.36
Sampling	.12	1.73	.28
Holding	.11	1.58	.25
Demurrage and reconsigning	.06	.88	.14
Federal appeals	.03	.37	.06
N. Dak. inspection	.03	.37	.06
Total transportation cost	35.18	522.81	83.95
Elevator marketing margin	6.72	99.93	16.05
Total marketing spread	41.90	622.74	100.0

1/ The following data apply to 27 carloads of flaxseed shipped: Gross bushels per carload, 1,651; average bushels of dockage shipped, 164; net bushels of flaxseed per carload, 1,487; average price received per bushel, $3.45; average percent of dockage content, 10; average test weight per bushel, 50.18; average moisture content, 8.1 percent.

2/ Freight charges include the 3 percent Federal transportation tax which was in effect from World War II to August 1, 1958.

account for about 10 percent of the marketing expense. The commission charges on flaxseed, which amount to 8 percent of the elevator marketing charge, are based on the trade practice that they be 1 percent of the sale price, but with a minimum of 2 cents and a maximum of 3.5 cents per bushel. The weighing and sampling charges are usually small, and they differ according to the elevator's location and number of samples taken.

Demurrage charges are caused by delay in car unloading or placement, while reconsignment charges result from in-transit destination changes. When a Federal appeal is sought, the person making the request is charged $5 for the service if his contention is proved to be incorrect. Holding charges generally cost over $8 per carload but, like demurrage and reconsignment, they average much lower over a series of shipments. In North Dakota, carload inspections are made when flaxseed passes through certain subterminal centers.

TRANSPORTATION FROM COUNTRY ELEVATORS

Railroad

Nearly all transportation of flaxseed from country elevator assembly points, historically, has been by rail carrier. The grain industry was built around the railroads, with terminal elevators and mills located at strategic rail points and country elevators built along the railroad right-of-way. Nearly two-thirds of the country elevator operators contacted in Minnesota, North Dakota, and South Dakota employed railroads as the only means of shipping flaxseed during the 1955-56 marketing season. Table 8 shows that 2 of the 265 respondents used trucks exclusively in their business operations, while one-third stated that their transport facilities were provided by both railroads and motor trucks.

Table 8.--Country elevators using rail or truck transportation in marketing flaxseed

Functional classification	Operators interviewed	Using rail only		Using truck only		Using both rail and truck	
	No.	No.	Pct.	No.	Pct.	No.	Pct.
By States:							
North Dakota	177	122	68.9	0	0	55	31.1
South Dakota	29	19	65.5	0	0	10	34.5
Minnesota	59	31	52.5	2	3.4	26	44.1
By groups:							
Independent	154	94	61.0	2	1.4	58	37.6
Line	74	56	75.7	0	0	18	24.3
"15 plus"	37	22	59.5	0	0	15	40.5

During the 1955-56 marketing year, 90 percent of the flaxseed handled by the country elevators surveyed was transported by rail while 10 percent was moved by truck. The mode of transportation employed in moving flaxseed from country elevators varies among States and among areas within the Midwest flaxseed-producing belt. In some areas, elevator managers may have a choice between truck and rail transportation, while in other areas only rail transportation is available (table 9).

Truck

The greatest use of trucks for hauling flaxseed was found in Minnesota, where almost half of the elevators surveyed shipped flaxseed in this manner. Transporting flaxseed by truck was not as common, however, in North Dakota and

South Dakota, although about one-third of the elevators contacted in these States used trucks in moving some of their flaxseed. By functional classification fewer line elevator companies than other types of elevator organizations shipped their flaxseed by truck.

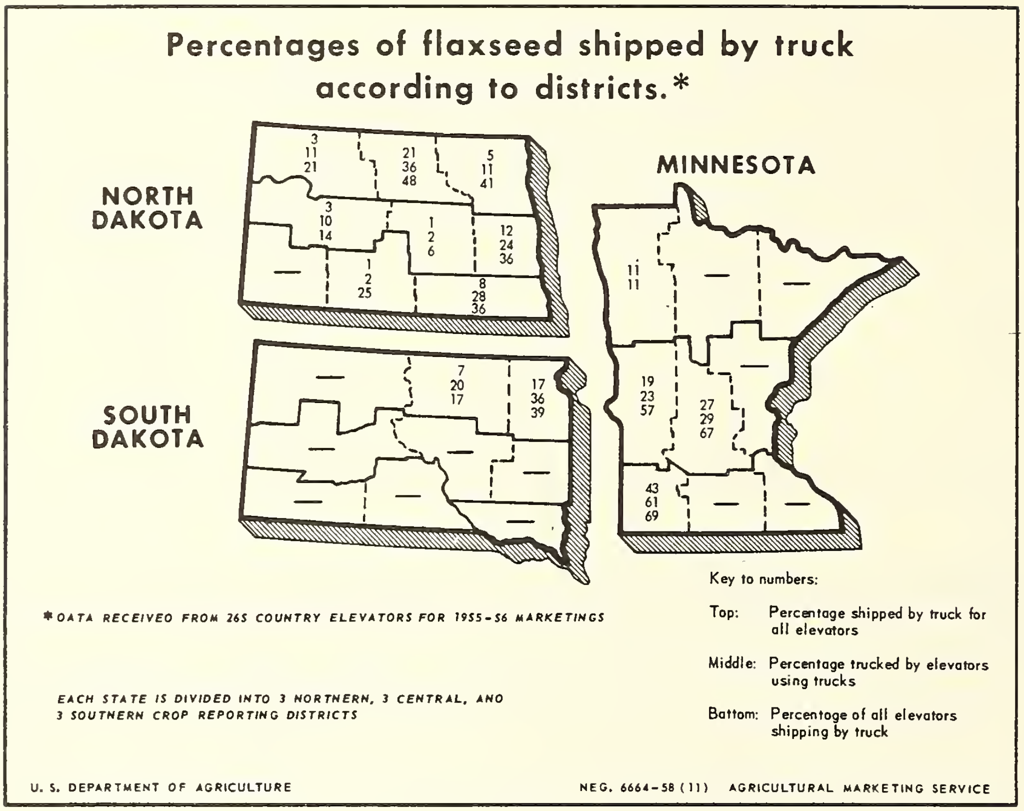
Table 9.--Percent of flaxseed shipped by country elevators by railroad and truck, by States, 1955-56

State	Elevators	Flaxseed handled	Flaxseed trucked	Flaxseed shipped-- By rail	Flaxseed shipped-- By truck
	Number	Bushels	Bushels	Percent	Percent
North Dakota	177	8,745,700	710,800	91.9	8.1
South Dakota	29	1,635,300	222,500	86.4	13.6
Minnesota	59	2,342,900	354,200	84.9	15.1
3-State total ...	265	12,723,900	1,287,500	89.9	10.1

Elevators using trucks in southwestern Minnesota shipped 61 percent of their flaxseed by this method, while those surveyed in the northern counties of the State shipped only 11 percent by truck. In southwestern Minnesota, the availability of trucks and the rapid growth of motor carrier transportation have resulted mainly from the relatively short distance to the Minneapolis terminal market. In some areas remote from the terminal market, truck transportation is used only for delivering flaxseed for seed to local customers. The proportion of country elevators using trucks is much higher than the proportion of flaxseed moved by trucks (fig. 4).

Hired motor carriers usually fall into 1 of 2 categories: The merchant truckers, who buy flaxseed directly from the grower or the elevator on a cash basis; or the specialized for-hire carriers, characterized as either contract carriers or common carriers. The important distinction between the contract carrier and the common carrier for-hire is that the contract hauler is not liable for losses or damage of flaxseed transported interstate, while the common carrier is insured against such losses. Generally, the carriers for-hire operate out of central locations. They, like the merchant trucker, haul other commodities as well as grain during much of the year. Except for local seed deliveries, flaxseed is usually transported by the specialized for-hire type of carrier.

One exception to the decline in the use of trucks as the distance from Minneapolis increases was found in north central North Dakota, where approximately 21 percent of the flaxseed handled was transported by truck from the country elevator. None of this flaxseed, however, was delivered to the Minneapolis or Duluth terminals; it was purchased at the country elevators by merchant truckers hauling the flaxseed into Canada. A price differential between United States and Canadian flaxseed was sufficient at that time to



Percentages of flaxseed shipped by truck according to districts.*

*DATA RECEIVED FROM 265 COUNTRY ELEVATORS FOR 1955-56 MARKETINGS

EACH STATE IS DIVIDED INTO 3 NORTHERN, 3 CENTRAL, AND 3 SOUTHERN CROP REPORTING DISTRICTS

Key to numbers:

Top: Percentage shipped by truck for all elevators

Middle: Percentage trucked by elevators using trucks

Bottom: Percentage of all elevators shipping by truck

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Figure 4

provide truckers a return above their costs--including the Canadian import duty. The seed eventually moved through Canadian country elevators into the terminal market at Winnipeg. In elevators where varying amounts of truck transportation were utilized, one-fourth of the flaxseed handled moved by truck while three-fourths moved by rail, as shown in table 10.

The percentage of flaxseed shipped by truck varied according to the volume of flaxseed handled by country elevators. Both the smallest and largest handlers of flaxseed used trucks more extensively than elevators handling intermediate amounts of flaxseed (table 11). The highest proportion of flaxseed shipped by truck was from elevators handling less than 10,000 bushels. A greater proportion of elevators handling 75,000 bushels or more of flaxseed used truck transportation, but shipped a smaller percentage of their total volume by truck than did the elevators handling less than 10,000 bushels. Elevators handling 10,000 to 25,000 bushels of flaxseed moved 96 percent of it by rail. Very small handlers receive flaxseed in amounts that can be accommodated more easily and inexpensively by trucks than by the larger boxcars.

Table 10.--Percentage of flaxseed shipped by truck

State	Elevators	Flaxseed handled	Flaxseed trucked	
	Number	Bushels	Bushels	Percent
North Dakota	55	3,439,000	710,800	20.7
South Dakota	10	691,000	222,500	32.2
Minnesota	28	1,175,000	354,200	40.1
3-State total	93	5,305,000	1,287,500	24.3

Table 11.--Percentage of flaxseed shipped by rail and truck according to the volume of flaxseed handled, North Dakota, South Dakota, and Minnesota

Flaxseed handled 1955-56	Elevators	Elevators using--			Flaxseed shipped--	
		Rail only	Truck only	Rail and truck	By rail	By truck
	Number	Percent	Percent	Percent	Percent	Percent
1,000 bushels:						
0 - 9.9	24	63.6	4.5	31.9	86.5	13.5
10 - 24.9	57	71.9	0	28.1	96.1	3.9
25 - 49.9	85	65.5	0	34.5	91.5	8.5
50 - 74.9	51	70.5	2.0	27.5	92.2	7.8
75 and over	48	56.2	0	43.8	88.1	11.9
Average	265	67.7	0.8	34.3	89.9	10.1

At elevators handling the largest volumes of flaxseed, a rather steady supply of flaxseed is readily available for truckers, who aid in relieving those elevators having heavy demands upon their capacity.

Generally, the distance between country elevators and terminal markets plays an important role in the availability and use of truck transportation. Country elevators, located in small communities distant from terminal markets, are seldom reached by regular truck lines desiring a load of grain for a return trip to the terminal market. Many of these elevators are off major trunk highways on poor, out-of-the-way roads relatively inadequate for large trailer trucks. There are, on the other hand, elevators located near the more concentrated population centers where trucks are more readily available.

In areas where both rail and truck transportation are available to elevator operators, the choice is determined by the cost or convenience of moving the seed. During the harvest season, high inventories of grain often necessitate additional transportation facilities to prevent congestion of an elevator. It is during this time that the greatest need for trucks arises because usually sufficient boxcars are not available between July and January to relieve the space shortage of the elevator.

Rail and Truck Cost Differences

In order to determine comparative freight charges, costs of transportation were obtained from 59 country elevators utilizing the facilities of both railroads and the specialized for-hire motor carriers. Country elevator operators selling flaxseed directly to merchant truckers at the elevator were unable to provide comparative freight costs.

Freight rates for rail and truck transportation were the same at 31 of the 59 country elevators using both modes of transportation. For the 31 elevators, truck rates were established so that the 5-cent-per-bushel unloading charge at the terminal market plus the trucking cost equaled the current rail rate. The cost of truck transportation was higher than that of rail at only 2 of 59 elevators and this amounted to only 1.5 cents more per bushel. At the remaining 26 elevators, the cost of truck transportation averaged 4.1 cents less than rail. Thus, when differentials existed, the truck rate was generally less than the rail rate at elevators using both forms of transportation (table 12).

The present truck rates on agricultural commodities are relatively flexible compared to established rail rates because motor carrier rates on farm products are exempted from being set by the Interstate Commerce Commission or by the regulatory commissions of the various States. Other regulations, such as safety requirements, do apply to motor carriers. Although no minimum rates have been set for intrastate truck movement, the Minnesota Railroad and Warehouse Commission requires that the minimum rates charged by the motor carriers be filed. Such rates are generally based upon a charge per 100 pounds for any hauling within a certain distance; they then increase progressively by additional mileage to a point where a flat rate is again charged.

In southwestern Minnesota, many commercial trucks primarily transfer grain. Elevator operators in the Red River Valley and more distant areas rely to a great extent upon back-haul agreements made with truckers delivering manufactured products into their area.

As the distance to the Minneapolis terminal increases, truck operating expenses generally increase to a point where truck and rail rates are identical (table 12). Elevators located in the northern and western areas of the States generally do not have access to the lower truck back-haul rates. Motor carrier freight rates for flaxseed in these areas, therefore, are in line with those established for the railroads. Other elevators, however, favor railroads for shipping flaxseed because the freight rate plus the 5-cent unloading charge makes truck transportation costs equal to, or above, those of the rail carrier.

Table 12.--Rail and truck rates for flaxseed in Minnesota, North Dakota, and South Dakota, 1956 1/

Functional groups of elevators	Elevators	Average rail rate per bu.	Average truck rate per bu. 2/	Savings by truck over rail
	Number	Cents	Cents	Cents
By transportation rates:				
Same rate	31	24.0	24.0	0
Rail lower	2	17.0	18.5	-1.5
Truck lower	26	19.5	15.4	4.1
By States and areas:				
North Dakota:				
Northern	6	28.8	28.8	0
Central	11	25.1	24.3	0.8
Southern	9	22.6	20.4	2.2
Minnesota:				
Northern	4	22.2	22.0	0.2
Central	12	17.0	15.3	1.7
Southern	9	18.1	14.3	3.8
South Dakota average 3/	8	22.1	19.4	2.7
3-State weighted average	59	21.8	20.0	1.8

1/ Rates in effect at time of survey and prior to the 12-percent increase of August 26, 1957.

2/ Includes 5-cent-per-bushel unloading cost at terminal market.

3/ The bulk of South Dakota's flaxseed is produced in the northeastern portion of the State so that no division by area could be made.

In one locality, several elevators used trucks owned by a nearby elevator which gave them rates substantially lower than the rail rates. In flaxseed-growing areas of southern Minnesota, terminal buyers sometimes send trucks to certain elevators to pick up flaxseed upon request. In some cases, the terminal office of line elevator companies arranges for truck transportation for nearby country elevators at a rate as much as 7 cents below the established railroad rate (even when the 5-cent unloading charge is included). Only 4 of the 265 country elevators surveyed used elevator-owned trucks for delivering flaxseed to terminal markets.

A major factor influencing the amount of flaxseed delivered by motor carrier is the 5-cent-per-bushel unloading charge imposed by the terminal elevators at the Minneapolis terminal market. This, of course, makes the moving of flaxseed by truck less attractive to many elevator managers. If this charge were removed, truck receipts of flaxseed at terminals could be expected to increase. The 5-cent-per-bushel charge is more common to flaxseed than to other grains, for which premiums are sometimes paid, rather than charges made, for truck receipts at the terminal. The unloading charge is intended to offset the loss of the in-transit rail privilege, which allows flaxseed to be processed into linseed oil and meal and then moved to distant markets at less than the point-to-point rate.

Economic Reasons for Railroad Shipping

Country elevator managers ship about 90 percent of their flaxseed by rail despite the seasonal boxcar shortage problem and the generally poor condition of many boxcars received. The reasons given by 172 elevator managers for not shipping flaxseed by trucks are listed in order of their importance below. Many of the respondents had more than one reason for not shipping flaxseed by truck and some gave as many as three.

Elevator operators' reasons for transporting flaxseed by rail

	Number
No trucks available	48
No truck weighing or loading facilities	43
Truck discount of 5¢ per bushel at terminal elevator	29
Small truck loads inconvenient and hard to load	21
Dockage content higher	12
No chance for grade appeal when flaxseed is trucked	12
Satisfied with the railroads	11
Railroad shipment considered part of elevator policy	8
Never had any need for truck transportation	8
Felt obligated to the railroads	4
Truck shipping rates higher than rail	3
Other reasons, including: Trucks wouldn't haul uncleaned flaxseed; terminal too far for trucks; limited number of buyers; and lack of trust in truckers	11
Total	210

Trucking grain to terminal markets in large transfer vans is still a relatively new mode of transportation in the flaxseed region and most of the country elevators are not equipped to load trucks under present gravity spouts. The loading spouts are located alongside railroad trackage for use in loading boxcars. Some country elevators have installed truck loading and weighing facilities; but at others, where no substantial freight savings can be obtained by truck transfer, managers hesitate to expand capital investment to provide equipment for both rail and truck shipments.

Many elevator operators indicated that the smaller loads hauled by trucks were undesirable or inconvenient from the elevator's standpoint. Some maintained that the loading of an equal volume into a boxcar was faster once the car was readied for use. It takes about 3 to 4 large trucks to haul as much flaxseed as one boxcar, with a proportionate increase in paper work with truck shipments. At many locations, trucks must be loaded when they arrive at the elevator, whereas boxcars are left and can be loaded at the convenience of the elevator manager. Others felt that shipments by truck limited their opportunity to appeal any grade or dockage designations. Some operators were well satisfied with the railroads and had no desire to employ trucks, while others felt obligated to the railroads through their commission firm. With some operators, shipment by rail had been the traditional company policy.

Economic Reasons for Truck Shipping

One of the major problems of marketing any type of grain is the inadequate supply of boxcars during the harvest season. Over a period of years, recurring boxcar shortages between July and January have been a serious problem to all concerned. Some areas have been affected to a greater extent than others, but nearly all have been adversely affected at some time or another. To avoid complete dependence on boxcars, some elevator managers contract to have a certain part of their grain hauled by truck each year. Thus, by not relying completely on rail transportation, they hope to avoid having their elevators congested for any extended period of time.

Some truckers are in a position to provide better and more expeditious service than the railroads, and a rapid turnover is important to all grain merchandising. Delays and shrinkage losses in transit may be reduced by more expeditious movement of flaxseed in trucks from country elevators to terminals. Also, an elevator manager may ship by truck a load of high-moisture flaxseed directly to the terminal so that it can be unloaded and sold within a day, practically eliminating the danger of spoilage en route. A boxcar, however, may be delayed at a holding point for several days and flaxseed with high-moisture content can begin to heat by the time it is unloaded at the terminal.

Truck loading costs and manpower requirements in elevators possessing adequate truck loading facilities are much lower than similar boxcar loading costs, according to studies conducted in the southwestern United States. Loading an 1,800-bushel boxcar required 90 man-minutes compared with 12 man-minutes required to load a 600-bushel truck. Thus, the equivalent of 2.5 carloads of grain may be loaded out by truck during the time required to load 1 boxcar. The actual loading time averages 55 man-minutes for boxcars and only 8 man-minutes for trucks. The remaining portion of the 90 man-minute boxcar loading time was spent making the car grain-tight, installing grain doors, and cleaning, spotting, and pulling away the boxcar. 5/ Although the boxcar loading

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5/ Hudson, W. J., and Henschen, E. K. The Transportation and Handling of Grain by Motor Truck in the Southwest. U. S. Dept. Agr., Agr. Mktg. Serv. AMS 175, 1957.

time varied widely among Midwest elevators, an additional 15 man-minutes is usually required for preparing a boxcar for flaxseed shipment because of the extra lining and repair often needed. Therefore, on the basis of cost of operation, some managers believe that truck transportation is no more expensive, and may even be less expensive than rail.

There are other important economic effects that trucking may have on the conventional marketing of flaxseed. From elevators, or even from the farm producer, a truck may bypass some of the intermediate handlers and haul flaxseed directly to the processor. Thus, increased use of trucks may decrease the volume of business of some handlers by eliminating the need for their cleaning, storing, and shipping services. The performance of these services could be shifted to either the flaxseed producer or the linseed processor. Some country and terminal elevators could be affected adversely by such a change in the pattern of flaxseed marketing.

A very rapid increase in the use of trucks for transporting flaxseed could be expected if linseed oil processing facilities were to be constructed within the major production area rather than in the more distant terminal markets. Hauling distances, along with the high freight costs, would then be cut sharply. The speed and flexibility of trucks and their comparatively low cost of operation for relatively short distances would give them an advantage.

The railroads, by having low unit costs over longer distances, however, would continue to carry the bulk of shipments originating from the more distant areas. Also, flaxseed shipped by rail could still be processed, stored, or cleaned at a transit point and then continue on to its destination under the original through-freight rate. This transit privilege, provided almost exclusively by the railroads, is not available for flaxseed shipped by truck. Thus, the railroad transit privilege will continue to be a major obstacle in the growth of flaxseed shipping by motor carriers.

METHODS OF SELLING FLAXSEED

Nearly all flaxseed shipments by country elevators are either sold for deferred delivery on a "to arrive" bid, consigned to a commission merchant, or sold "on track." A very small portion is sold "on spot" at the terminal markets and a still smaller amount is sold for cash at the elevator to truckers. The choice of the method of sale depends on many factors, but the selection remains largely a managerial decision. Deferred delivery sales provide an opportunity to shift the risk of unfavorable price changes from the elevator to the buyer. The majority of elevator managers operate on a small marketing margin and prefer not to subject themselves to price fluctuations even though some are favorable.

"To Arrive" Sales

About 75 percent of the flaxseed is sold by deferred shipment through a "to arrive" sale. The percentage of such sales is highest in North Dakota, where nearly 80 percent of the flaxseed is sold on a "to arrive" basis. Under this method, the sale price is established before the flaxseed leaves the country elevator. In addition to the price, the time of shipment, grade, and terms of sale are specified. The terms of the contract may allow delivery within a period of a few days to 4 months, although the usual contract requires delivery in about 30 days. On a "to arrive" sale, the country elevator pays the freight and other charges incurred in delivery to the terminal market. The monetary return to the elevator is the terminal market value less transportation and related costs. The seller in this case assumes liability for any losses or damage to the grain while in transit, but the buyer must cover the risk of a price change.

The popularity of the "to arrive" flaxseed sale is enhanced by comparative uniformity of the seed. There is less need for a buyer to inspect the flaxseed, as over 90 percent usually grades No. 1. In grains where the grading system is complex and where other grading factors, such as the protein of wheat or the color of barley, are important, the potential buyer is more interested in making a personal inspection of a representative sample of the grain. Another reason for the predominance of "to arrive" sales is the lack of premiums and discounts. The percentage of flaxseed sold "to arrive," along with the other methods of sale, are shown in table 13.

Table 13.--Percentage of flaxseed sold, by method of sale, during the 1955-56 marketing year by North Dakota, South Dakota, and Minnesota elevators

States and groups	To arrive	Consignment	On track	Spot	Cash at elevator
	Percent	Percent	Percent	Percent	Percent
States:					
North Dakota	78.7	5.8	8.6	4.1	2.8
South Dakota	57.7	35.1	7.2	---	---
Minnesota	69.2	13.5	17.3	---	---
Functional groups:					
Independent	74.3	10.1	11.5	3.2	.9
Line	68.2	16.2	15.6	---	---
"15 plus"	78.7	8.4	3.4	4.1	5.3
3-State average	74.5	10.7	10.0	2.9	1.9

Consignment Sales

The second method by which flaxseed is sold is by consignment. The major advantage of consignment sales is that the shipper may be able to take advantage of higher prices for better grades of seed. Consignment sales generally constitute a smaller proportion of the total sales of flaxseed than of other grain because of the comparative uniformity of flaxseed. In grain where there is more variation in the quality, the poorer lots are often sold on the "to arrive" or "on track" basis while better shipments are often consigned.

In consignment sales, the country elevator ships grain to a commission firm or a terminal elevator company. During the in-transit period, the country elevator retains ownership of the flaxseed and is also responsible for any losses which may occur en route. The country elevator operator must wait until after the grain has been inspected, graded, and sold by his representative before receiving payment. Approximately 10 percent of the 1955-56 crop of flaxseed was sold by consignment. In many cases, line elevators are inclined to ship a greater part of their flaxseed by consignment than are independent private or cooperative elevators. Elevators handling larger volumes of flaxseed tend to ship the least amount by consignment (table 13).

"On Track" Sales

"On track," the third method of sale, is used by almost as many flaxseed shippers as the consignment method. Shippers selling by this procedure are quoted the actual price they will receive for flaxseed loaded on a boxcar at the country elevator. The transportation expense as well as the risk of price change become the responsibility of the buyer. The shipper, however, must guarantee the quality.

Table 14 shows where and when price quotations apply and the responsibilities of the buyer and seller for each of the various methods of sale.

Table 14.--Responsibilities of the buyer and seller according to the various methods of flaxseed sales

Method of sale	Place at which price applies	Price applies at time of--	Who pays freight	Who bears price risk
"To arrive"	Terminal market	Sale (delivery)	Seller	Buyer
Consignment	Terminal market	Sale (delivery)	Seller	Seller
"On track"	Country elevator	Purchase (contract)	Buyer	Buyer
"On spot"	Terminal market	Sale (delivery)	Seller	Seller
Cash at the elevator ...	Country elevator	Sale (delivery)	Buyer	Buyer

Sales "on track" assume greater importance in crops other than flaxseed but, generally, it is the least important method. In 1955-56 only 10 percent of all flaxseed sales were marketed on an "on track" basis. A slightly larger percent, however, are made "on track" than on consignment in independent co-op and line elevators. Only the largest flaxseed handlers sold relatively small amounts by this method.

"On Spot" Sales

Another method of sale, "on spot," is the outright purchase of flaxseed at terminal markets by buyers in a position to make an immediate cash transaction. Also included in this category are the overages, or bushels in excess of the number required to fill "on track" or "to arrive" sales. Sometimes this overage may involve several hundred bushels or more if the elevator chooses to chance a price rise on part of the shipment. Generally, however, overages do not exceed the contracted amount by more than a "safety margin," or an amount adequate to cover any shrinkages that may occur. The prices received for the "on spot" overage may be the same as the original deferred delivery contract or it may be 20 cents higher or lower depending upon price fluctuations between the time of contract and the time of delivery. Only 3 percent of the flaxseed shipped by country elevators surveyed was sold on the spot market. The volume of flaxseed sold on the spot market is relatively small because of the inherent uncertainty of price changes.

Cash at the Elevator

What can be considered the fifth and last method of flaxseed sale is called "cash at the elevator." Nearly all sales conducted in this manner were by elevators located near the Canadian border in north-central North Dakota. These sales, transacted at the country elevator, were made to merchant truckers hauling flaxseed into Canada. The normal operations of country elevators include cash sales of feed grains to nearby farmers. These sales normally involve only feed grains, and rarely does flaxseed, which is processed, find an important outlet by this method. These sales in North Dakota represented 1.9 percent of all the flaxseed sales during 1955-56.

Hedging

Flaxseed sales contracts, like the sales contracts for other grains, usually involve hedges in futures markets. The transactions involved are performed by the commission firm representing the elevator. Although deferred delivery contracts are often considered hedges by elevator operators, the only true hedge occurs when an operator protects his purchases on the future markets. Most elevators maintain a hedge on consignment sales to protect themselves from price changes. A few elevator managers, however, feeling that prices will move in their favor, place no hedge against price changes.

The time required to accumulate an amount of flaxseed sufficient for shipment varies among elevators. Because of this, it becomes necessary for some elevator operators to hedge or contract for future delivery on each purchase. The minimum amount required for hedging is 500 bushels. When a sufficient amount of flaxseed is acquired, the elevator notifies its commission company and the carload is sold. Sometimes an elevator manager, assured of his flaxseed receipts, will contract for deferred delivery before he has actually accumulated a carlot lot. A commission company generally handles the terminal market sales and the hedging operations for the country elevator. With the exception of that flaxseed sold to merchant truckers, the mode of transportation employed by elevators does not affect the method of sale. The greater part of flaxseed hauled by both rail and truck is shipped "to arrive" or on a consignment contract. "On track" sales, as the name implies, are normally carried by railroads, while the "cash at the elevator" transactions involve truck movement.

TERMINAL MARKETS USED

Flaxseed moves from country elevator assembly points in the major production areas to terminal markets for storage, processing, or delivery to more distant terminals. The terminal markets used by country elevators merchandising flaxseed in the upper Midwest are Minneapolis, Duluth, and, to a lesser extent, Sioux City, and the Canadian terminal of Winnipeg. Because of its strategic location in relation to the production area, Minneapolis has become the leading market for flaxseed produced in the United States (table 15). Most of the South Dakota and southern and central Minnesota elevators used only the Minneapolis market. A number of the nation's most important flaxseed processing plants, as well as an adequate storage capacity, are located in the Minneapolis area, drawing the bulk of the 3-State production into this terminal. Duluth, because of its importance as an inland-waterway port, receives flaxseed for reshipment to Buffalo and other eastern cities for processing or for sales to foreign purchasers. In recent years, Duluth has become a shipping point for a portion of the surplus flaxseed purchased by the Commodity Credit Corporation (CCC).

Table 15.--Terminal markets used for sale of flaxseed

State	Total elevators		Terminal market used							
			Only Minneapolis		Only Duluth		Minneapolis and Duluth		Other	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
North Dakota	144	62	51	35	3	2	80	56	10	7
South Dakota	30	13	25	84	1	3	3	10	1	3
Minnesota	58	25	40	69	0	0	14	24	4	7
3-State total	232	100	116	50	4	2	97	42	15	6

Although transportation rates for elevators using both markets were the same in some areas, and in other areas favored either Minneapolis or Duluth, the greater part of the flaxseed was shipped to Minneapolis--even at a higher freight rate. This is often caused by price differentials between the 2 markets, which generally favor the Minneapolis terminal up to 15 cents per bushel. Flaxseed delivered to the CCC, however, receives the same price at either market. When the destination of a boxcar leaving a country elevator is unknown, the car is delivered to a holding point from which the freight rate to either terminal is the same.

FLAXSEED SCREENINGS

Method of Sale

Dockage material that has been separated from flaxseed by cleaning is commonly referred to as flaxseed screenings. Years ago, flaxseed was seldom cleaned at country elevators but was shipped to terminal markets, where the cleaning operation was conducted. Returns were made to the elevator for the value of the screenings. Many elevators have since obtained adequate cleaning equipment for removing dockage from flaxseed, since returns are no longer made for the accompanying foreign material. As the number of elevators purchasing cleaners increased, screenings have accumulated at country elevators. Other markets, in addition to those at the terminals, soon developed for flaxseed screenings for use in livestock and poultry feeds.

Nearly half of the flaxseed screenings are purchased at the elevator by truckers, and almost one-third are sold as livestock and poultry feed supplements to local buyers (table 16). Only one-fourth of the total volume is shipped directly to the terminal markets. However, as country elevators remove an average of only 37 percent of the dockage from flaxseed, the terminal markets still receive the bulk of the screenings. In addition, most of the oil-bearing screenings collected by truckers are shipped to the terminal markets after being assembled and sorted at a screenings plant.

Table 16.--Method of sale for flaxseed screenings, 1955-56

State	At elevators	To truckers	Locally	At terminal
	Number	Percent	Percent	Percent
North Dakota	90	47	30	23
South Dakota	6	49	51	--
Minnesota	27	34	23	43
3-State total..	123	47	30	23

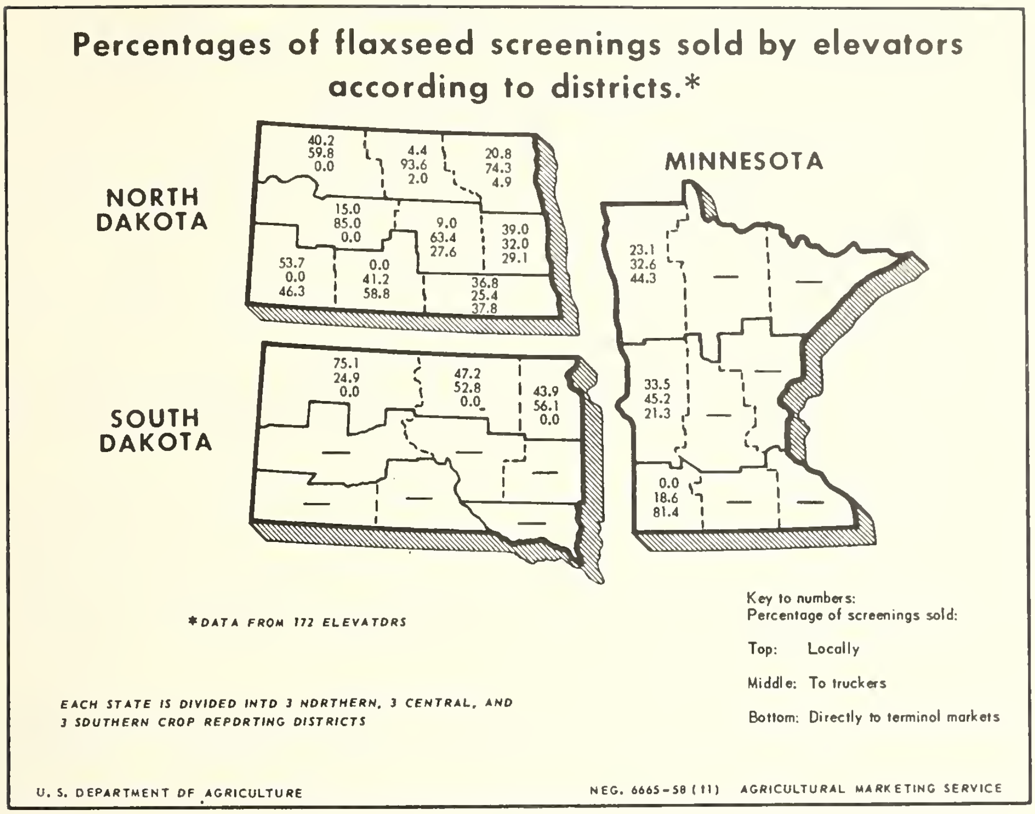
Truckers, who pick up the largest share of the flaxseed screenings, make delivery directly to the terminal market if the distance is not too great. The majority, however, return to their local or regional plant that is closer and that specializes in handling and separating screenings. Here screenings are separated according to value. Rough screenings are separated into "bottoms," buckwheat, mustard seed, wild oats, other grains, and cracked flaxseed. Bottoms of good feed quality, consisting of all weed seeds except buckwheat, mustard seed, and wild oats, are often mixed with other grain screenings and sold for feed. The buckwheat and wild oats are generally sold locally to farmers, ranchers, and elevator operators to be utilized for feed, while the mustard seed, other grains, and cracked flaxseed are shipped separately to the terminal market. Often a screenings firm operates out of several widely scattered locations.

Sales to local livestock and poultry producers provide an outlet for approximately 30 percent of the screenings of country elevators. These screenings are mixed with feed sold by the elevator or sold as such to individual farmers or ranchers having large-scale feeding operations. In areas where a sizable amount of livestock and poultry feeding is carried on, local sales may easily be stimulated. The distance farmers will haul screenings depends largely on the quality, quantity, and price, but rarely exceeds more than 25 miles. Usually, the requirements of individual farmers or ranchers are small, so that elevators having a relatively small volume would find it more economical to dispose of the screenings in this manner as they become available. Otherwise inefficient use of storage capacity would result during the time required to accumulate a car or truck load.

Terminal market buyers, as a group, receive only 23 percent of the screenings marketed directly by elevators in the major flaxseed area. Over half of the screenings that are purchased by truckers, however, are delivered to terminal markets after being sorted. Most flaxseed screenings, as well as flaxseed itself, are shipped by rail to terminal elevators. When a carload of screenings contains less than 5 percent flaxseed, the freight rate is the regular grain rate rather than the higher rate charged for flaxseed. Screenings may be economically shipped further by railroad than by truck, but many elevators located in the western Dakotas find that they are too distant for either mode of transportation when lower grades of screenings are to be shipped. At the terminal, low oil-bearing screenings are used in mixed feed preparations where bulk is needed. Screenings which contain sizable quantities of oil-rich seeds are processed and the oil is extracted for use as supplements in many types of products having an oil base, such as paints.

Over half of the country elevators contacted sold screenings through only one outlet, usually to a trucker rather than to either local or terminal buyers. If there is no local or trucker demand for screenings, and transportation costs prohibit sales to the terminals, an elevator may have a problem in disposing of the screenings. In isolated instances, poorer grade screenings may be offered to any potential customer who will haul them off the premises. Line elevator companies tend to ship the greatest proportion of their screenings to the terminal market, while independent elevators are more apt to sell locally or to truckers.

Figure 5 shows the percentage of screenings marketed by country elevators through local buyers, truckers, and terminal markets, by districts within the



Percentages of flaxseed screenings sold by elevators according to districts.*

*DATA FROM 172 ELEVATORS

EACH STATE IS DIVIDED INTO 3 NORTHERN, 3 CENTRAL, AND 3 SOUTHERN CROP REPORTING DISTRICTS

Key to numbers:
Percentage of screenings sold:
Top: Locally
Middle: To truckers
Bottom: Directly to terminal markets

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Figure 5

major flaxseed belt. A substantial proportion of the screenings sold in the southern areas of North Dakota and southwestern Minnesota are marketed through terminal points, while in the northern areas of North Dakota most of the screenings are marketed through truckers. Generally, the proportion of screenings sent to terminal markets decreases in the districts which are further west. The percentage sold locally or to truckers, on the other hand, is quite variable because of the relative amount of competition among buyers, the quantity of screenings available, and the proximity to the Minneapolis terminal market.

Market Value of Screenings

Flaxseed screenings are valuable as livestock feeds and for their oil content. The oil content of weed seeds can be either a natural part of the seed or oil which has been absorbed from the flaxseed. Pigeon grass, one of the most predominant weed seeds found in screenings, is noted for its ability to absorb oil from flaxseed. Mustard seed, valuable for its own oil content, is more commonly found in flaxseed that has been seeded early as it generally shells before late-seeded flaxseed is harvested. Cracked or small flaxseed kernels can be separated and sold as flaxseed, while buckwheat, wild oats, and kernels of other grains are important for their feed value rather than for oil.

The price an elevator receives for screenings is often based largely on the type and quality of the screenings, the locality where the flaxseed was grown, and the length of time the screenings were stored with the flaxseed. When the oil content is used as a basis of price determination, variations of 1 percent above or below 15 percent receive a premium or a discount of $1 per ton. Screening processors sell each type of oilseed separately because of the varying oil content of each and because better prices are received for individual lots of such seeds. For example, bottoms such as pigion grass may have a terminal market value of only 0.5 cent per pound, while other higher oilseeds, such as mustard, will sell for 1.5 to 2 cents per pound. Other grains, such as wheat and barley, included in the screenings will generally bring a better price, equal to their market value of 2 to 2.5 cents per pound, while the small and cracked flaxseed may sell slightly higher depending upon the oil content.

The distance to the terminal markets and prices offered there are important factors affecting the value of flaxseed screenings. Proportionate net returns to elevators for screenings differ from those for flaxseed itself, as nearly one-third of the screenings are sold locally to ranchers and farmers, while the bulk of the flaxseed must be transported to distant terminals.

Conditions at the terminal market determine the value of screenings received directly from elevators and, to a great extent, the price truckers will pay for an individual lot of screenings at the country elevator. However, prices received for screenings sold locally by an elevator are, to some degree, free of the terminal market forces. These prices are affected more directly by competing commercial and farm grown feeds and by the price quotations of screening processors selling part of their separated feed materials back to local livestock producers. Prices received by elevator operators for locally sold screenings, therefore, generally fluctuate between the higher terminal market price and the lower returns obtainable after freight costs if deliveries to the terminal were made.

From table 17, it would appear that terminal markets usually offer a higher price than other buyers. If transportation costs are deducted, however, the net proceeds are greatly reduced in outlying areas. In these areas, the local buyers' price offers a higher return to the elevator than can be obtained by shipping the screenings by rail to terminal markets for sale. Local buyers also pay a higher price per ton for screenings than do truckers, who must sustain the initial cost of assembly, separating, and the later freight cost of shipping the finished screenings to the terminal.

The transportation cost of screenings shipped to terminal markets often constitutes over half the total price received per ton by elevators in some areas. For example, an elevator may receive $17 per ton at the terminal, but a transportation cost of $9 reduces the return to only $8. Thus, because of

Table 17.--Average prices received per ton for screenings sold by elevators, 1955-56

State	Average price received per ton for screenings: Truckers	Local buyers	Terminal market	Total average price
	Dollars	Dollars	Dollars	Dollars
North Dakota	10.70	12.30	15.00	11.20
South Dakota	13.50	16.70	---	14.80
Minnesota	15.80	16.90	18.00	15.70
3-State average	11.70	13.80	17.30	12.50

the relatively low per-unit value, the distance which screenings can profitably be shipped or trucked is quite limited. Flaxseed screenings containing higher valued materials, such as oil, can, of course, be sold profitably at greater distances. Since local buyers and truckers pay their own transportation costs, country elevator operators generally receive the greatest return above costs from selling their screenings to these buyers at the elevator.

The average price received by country elevators for flaxseed screenings in the 3-State area was $12.50 per ton, although the net return was slightly lower after subtracting transportation costs for terminal deliveries. Returns increased from an average of $10.80 to $12 per ton between the northern and southern areas of North Dakota although no definite west-to-east price rise was noted. The variations in net returns may be because the prices paid by the local buyers are not competitively affected by prices at the terminal market which are dependent upon high transportation costs. The average return in northern Minnesota was $13.90 compared to the highest return found in the 3-State area, $18 per ton, in central Minnesota. The Minnesota prices are definitely affected by the terminal market; therefore, the prices paid by local buyers and truckers are substantially higher than in North Dakota. Prices received by South Dakota elevators fall between those of North Dakota and Minnesota, being more closely allied to the latter because of the influence of the Minneapolis terminal market.

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